DOCUMENT RESUME

ED 303 348 SE 050 332

TITLE	Fractions. Mathematics Series: Principles, Concepts and Applications.
INSTITUTION	Oklahoma State Dept. of Vocational and Technical Education, Stillwater. Curriculum and Instructional Materials Center.
PUB DATE	88
NOTE	198p.; Colored pages may not reproduce well.
AVAILABLE FROM	State Department of Vocational and Technical Education, Curriculum and Instructional Materials Center, 1500 West 7th Avenue, Stillwater, OK 74074 (SP-1021, $20.00).
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC08 Plus Postage.
DESCRIPTORS	Arithmetic; *Fractions; *Learning Modules; Mathematical Applications; *Mathematical Concepts; Mathematical Enrichment; Mathematics Achievement; Mathematics Materials; *Mathematics Skills; Mathematics Tests; *Secondary School Mathematics; *Vocational Education

ABSTRACT

The "General Mathematics" series contains six modules intended to help students become more competent with basic mathematics. This module on fractions is designed to build or increase students' level of understanding and to help them develop those skills necessary to successfully understand and use basic fraction skills that are necessary for many vocational jobs and that act as a basis for additional understanding. Units included are: (1) "Understanding Fractions"; (2) "Proper, Improper, Mixed and Equivalent Fractions"; (3) "Converting and Reducing Fractions"; (4) "Adding Fractions"; (5) "Subtracting Fractions"; (6) "Multiplying Fractions"; (7) "Dividing Fractions"; and (8) "Fractions Review." The format of each unit includes basic components that form a unit of instruction: performance objectives, suggested activities for the instructor, information sheets, tests, answers to tests, and assignment sheets. Depending on specific objectives, there may or may not be transparency masters, assignment sheets, and job sheets included in the unit of instruction. (YP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED303348

MATHEMATICS SERIES
Principles, Concepts and Applications

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
W. D. Frazier
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

FRACTIONS

SE 050 332

FRACTIONS

Developed by the
Oklahoma State Board of Vocational and Technical Education
Curriculum and Instructional Materials Center

88-005705

Copyright 1988
State Department of Vocational and Technical Education
Curriculum and Instructional Materials Center

All rights reserved.

Printed in the United States of America by the
State Department of Vocational and Technical Education
Stillwater, Oklahoma 74074

This publication, or parts thereof, may not be reproduced in any form by photographic, electrostatic, mechanical, or any other method, for any use including information storage and retrieval, without written permission from the publisher.

Use of commercial products in these instructional materials does not imply endorsement by the Oklahoma State Department of Vocational and Technical Education.

The Oklahoma State Department of Vocational and Technical Education does not discriminate on the basis of race, creed, color, national origin, sex, age, veteran status, or qualified handicap.

FRACTIONS

TABLE OF CONTENTS

Unit I	UNDERSTANDING FRACTIONS	1
Unit II	PROPER, IMPROPER, MIXED AND EQUIVALENT FRACTIONS	27
Unit III	CONVERTING AND REDUCING FRACTIONS	53
Unit IV	ADDING FRACTIONS	77
Unit V	SUBTRACTING FRACTIONS	117
Unit VI	MULTIPLYING FRACTIONS	151
Unit VII	DIVIDING FRACTIONS	187
Unit VIII	FRACTIONS REVIEW	219

FOREWORD

The *General Mathematics* series is intended to help students become more competent with basic mathematics. The student will be introduced to the basic mathematic principles and concepts as well as have the opportunity to apply those principles and concepts. The series contains six (6) modules ranging from Whole Numbers to Measurement to Consumer Math (which includes managing income and basic microcomputer awareness). Each modules takes the students through the important areas within the subject matter to ensure a basic working knowledge and skills.

The *Fractions* module will allow students to build or increase their level of understanding of fractions.This module helps students develop those skills necessary to successfully understand and use basic fractions skills that are necessary for many vocational jobs and that act as a basis for additional understanding.

Dr. Roy Peters, Jr., Director
State Department of Vocational
and Technical Education

ACKNOWLEDGEMENTS

The development of the *General Mathematics: Fractions* is credited to the staff of the Oklahoma State Department of Vocational and Technical Education (SDVTE) and various individuals.

A very special thanks goes out to the staff members of the Curriculum and Instructional Materials Center (CIMC). Sheila Stone, Coordinator of Curriculum Development, provided the support and encouragement necessary to successfully develop the series. Dr. Clyde Matthews, past Coordinator of Special Programs, gave his support during the production, and Billie Frazier, Vocational Specialist, provided assistance during the committee conference.

Special thanks goes to the committee members:

Dirk Allen — Harrah High School
Jan Bull — Mangum High School
Kathy Cloud — Rush Springs High School
Margaret Spann — Lindsey High School
Tod Williams — Newcastle High School

A very special thank-you also goes to Dirk Allen's students for developing many of the games used throughout the series.

The CIMC would also like to extend a great appreciation to Kaye White, Technical Writer, for her assistance in developing the *Fractions* module.

Throughout the development process, the communications center played an important part. Therefore, a special appreciation is extended to Debbie Hixson, Manager, and typsists Rose Primeaux and Lisa Tomlinson.

Terrell G. Ogilvie,
Technical Writer
Curriculum and Instructional
Materials Center

OTHER MODULES IN THE *GENERAL MATHEMATICS* SERIES

WHOLE NUMBERS

DECIMALS AND PERCENTS

MEASUREMENTS

GEOMETRY

CONSUMER MATH

USE OF THIS PUBLICATION

Instructional Units

Fractions includes eight instructional units. A standard format was established in 1970 for development of instructional materials for all Oklahoma vocational teachers. This format includes eight basic components that form a unit of instruction: performance, objectives, suggested activities for the instructor, information sheets, assignment sheets, job sheets, transparency masters, tests, and answers to tests and assignment sheets. Depending on specific objectives, there may or may not be transparency masters, assignment sheets, and job sheets included in the unit of instruction.

All of the unit components "zero in" on measurable and observable learning outcomes. Instructors are encouraged to supplement, personalize, localize, and motivate with these materials in order to develop a complete teaching/learning process.

Units of instruction are designed for use in more than one lesson or class period of instruction. Careful study of each unit of instruction by the instructor will help him or her determine the following

A. Amount of material that can be covered in each class period
B. Skills that must be demonstrated
    1. Supplies and equipment needed
    2. Amount of practice needed
    3. Amount of class time needed for demonstrations
C. Supplementary materials, such as pamphlets and filmstrips, that must be ordered
D. Resource people who must be contacted

Performance Objectives (white pages)

Each unit of instruction is based on the performance needed for successful employment in an occupational area. Performance objectives are stated in two forms: unit objectives, stating the subject matter to be covered in a unit of instruction; and specific objectives, stating the performance necessary to reach the unit objective.

Since the objectives of the unit provide direction for the teaching/learning process, it is important that instructors and students have a common understanding of the intent of the objectives. Following is a list of performance terms, their meanings, and behavioral synonyms that may have been used in this material.

A. Name — The individual supplies a name for objects, events, or people

    Behavioral synonyms: Label, list, letter, record, reiterate, repeat, write

B. Identify — The individual selects a named, described, or pictured object by pointing to it, touching it, picking it up, or selecting it

    Behavioral synonyms: Select, mark, match, choose, judge

C. State a rule — The individual communicates a relationship or principle that could be used to solve problems or perform a task

D. Apply a rule — The individual supplies an answer to a problem by using a stated relationship or principle

   Behavioral synonyms: Solve, calculate

E. Describe — The individual relates sufficient characteristics or properties of an object or event so that a second individual will be able to state what is being discussed

   Behavioral synonyms: Define, discuss, interpret, recite, tell how, tell what happens when

F. Distinguish — The individual selects an object or event from two or more that are easily confused

   Behavioral synonyms: Discriminate, differentiate

G. Order — The individual arranges three or more objects or events in a sequence based on a stated property

   Behavioral synonyms: Arrange, sequence, list in order, classify, divide, isolate, sort

H. Construct — The individual makes a physical object, a verbal statement, or a drawing

   (NOTE: *Construct* is used when the finished product or result is important.)

   Behavioral synonyms: Draw, make, build, design, formulate, reproduce, transcribe, convert, put together, compile

I. Demonstrate — The individual performs several operations necessary to carry out a specified process

   (NOTE: *Demonstrate* is used when it is desirable to watch the student perform a task, one of the highest levels of student performance.)

   Behavioral synonyms: Show your work, show procedure, perform an experiment, perform the steps, operate, remove, replace, turn off/on, (dis)assemble, (dis)connect

The objectives should be provided for students and stressed throughout the teaching/learning process. This will help answer any questions concerning performance requirements for each instructional unit. The objectives can also help determine teaching strategies and instructional methods. Prepare for each unit by deciding how each objective can best be taught.

The objective sheet may also be used as a quick pretest to determine prior knowledge of students and to determine whether further study or activities are necessary. Instructors should feel free to modify, delete, or add objectives in order to meet the needs of the students and community. When changes in objectives are made, the instructor should remember to supply the needed information, assignment and/or job sheets, and criterion test items.

Suggested Activities (pink pages)

This component is included only in instructor material. The suggested activities page assists the instructor during the preparation stage of the teaching/learning process by providing suggestions for delivery and/or presentation during the instructional process. Read the suggested activities before teaching the units to allow time to obtain supplemental materials, prepare audio-visual materials, and contact outside resources. Duties of the instructor will vary according to the particular unit.

The references that are listed are ones used in the development of each unit. They should be used by the instructor to supplement her or his knowledge of the subject area or to help students with particular interests or occupational objectives in the area covered.

Supplements (white pages)

Supplements are additional teaching aids that support portions of the Information Sheet. Supplements include such activities as games, puzzles and additional information (which is intended to be used as the instructor deems necessary.)

Supplements may be photo-copied for classroom use only.

Transparency Masters (white pages)

Transparency master provide information in a special way. Transparencies direct the class' attention to the topic of discussion. Transparencies may present new information, or they may reinforce information presented in the information sheet. They are particularly effective when identification is necessary. Make transparencies and place them in the notebook where they will be immediately available for use.

Information Sheet (green pages)

The information sheet provides "must know" content essential for meeting the cognitive (knowledge level) objectives of the unit. The information is written in a topical outline form and is keyed to the specific objectives.

Instructors will find that the information sheet serves as an excellent guide for presenting background knowledge necessary to develop the skills specified in the unit objective. The information sheet may also be used for coordination activities and advisory committees.

Students should read the information sheet before the information is discussed in class. Space is provided in margins for students and instructors to add notes that supplement, localize, personalize, or provide motivation for each unit.

Assignment Sheets (brown pages)

Assignment sheets give students a chance at problem solving, self-assessment, and/or practical experience with the information. They assist students in the application of knowledges that are necessary prerequisites to skill development. These may be given to the student for completion in class or used for homework assignments. Answer sheets are provided when appropriate and can be used by the student and/or instructor for checking student progress.

Job Sheets (blue pages)

Job sheets are another important segment of a unit of instruction. The job sheets provide a list of equipment, tools, and materials needed to complete a manipulative or psychomotor skill. They describe a step-by-step procedure needed to complete each task or job. Diagrams, photographs, and illustrations are provided to assist students in achieving the skill.

Instructor should demonstrate to students the procedure outlined in each job sheet. Furthermore, the instructor needs to localize the job sheet according to the equipment and supplies available in the local lab or shop situation. Job sheets also furnish potential employers with a picture of the skills being taught and the performances they might reasonably expect from a person who has had this vocational instruction.

Tests (White pages)

This component provides criterion-referenced evaluation of every objective listed in the unit of instruction. It is crucial to note that both paper/pencil and performance objectives must be evaluated.

The tests may be written or oral. It is recommended that the tests be divided into shorter tests covering three or four objectives at a time and given soon after those objectives have been covered. A selection of questions from the units covered may be used for final tests at the end of each term if desired. If objectives have been added, deleted, or modified, be sure to make the changes on the test.

The acceptable response on a unit test, 85 percent in most units, may be raised or lowered to fit the topic or students' ability levels. The percentage applies to the overall score, not to each individual question. The final unit grade should be obtained by using the paper/pencil score along with evaluations of students demonstrations of the desired skills.

The tests are in the instructor's book only, but may be photo-copied for classroom use only.

Answers to Test and Assignment Sheets (pink pages)

These components are designed to assist the instructor in evaluation of student performances.

Teaching Methods

It is a challenge to keep students motivated. Supplement the objectives by providing the "why," personal experiences, and current information. Prepare for each unit by deciding how each objective can best be taught. Allow students to become involved in preparing and planning.

Corrections and Suggestions

The Curriculum and Instructional Materials Center wants to provide vocational instructors and students with materials that are accurate and effective. Although the Center strives to maintain the highest standards of development and production, oversights occasionally do occur. If you find any errors in this or other CIMC publications, or have suggestions for improving their usefulness in vocational programs, please notify the CIMC staff. One easy way of pointing out errors is to make a photocopy of the affected pages and to indicate the correction on the copy. You can then mail the information to the CIMC, where it will be used to correct the publication before the materials are reprinted.

To ensure that the material is updated on a timely basis, it is important that you notify the Center of necessary corrections as soon as possible after discovering the error. Do not assume that someone else will notice the error and inform the CIMC; other users may be making the same assumption. Please send corrections and recommendations for improving this publication to the following address:

Curriculum and Instructional Materials Center
Oklahoma State Department of Vocational and
Technical Education
1500 W. Seventh Avenue
Stillwater, Oklahoma 74074

UNDERSTANDING FRACTIONS
UNIT I

UNIT OBJECTIVE

After completing this unit, the student should be able to identify the numerator and denominator in a fraction, divide and shade figures to represent given fractions, and solve fractional story problems using diagrams. This ability will be evidenced by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Match three terms and definitions related to fractions.
2. Identify the numerator and denominator in a given fraction.
3. Divide and shade six figures to represent given fractions.
4. Solve a fractional story problem using diagrams to illustrate the solution.

UNDERSTANDING FRACTIONS
UNIT I

SUGGESTED ACTIVITIES

I. Unit contents

- A. Objective sheet
- B. Suggested activities
- C. Supplements
  1. Supplement #1 — Fraction Word-Find Puzzle
  2. Supplement #2 — Answer Key to Fraction Word-Find Puzzle
- D. Pretest
- E. Answers to pretest
- F. Information sheet
- G. Assignment sheets
  1. Assignment Sheet #1 — Fraction Parts
  2. Assignment Sheet #2 — Identify and Draw Fractional Parts
  3. Assignment Sheet #3 — Story Problems
- H. Answers to assignment sheets
- I. Test
- J. Answers to test

II. Instructor's guide

- A. Order (or obtain) materials to supplement unit
- B. Give pretest
- C. Critique pretest and take them up after discussing

  (NOTE: If student scores 85 percent or higher, he or she does not need to study this unit.)
- D. Provide students with copies of the unit
- E. Discuss unit and specific objectives
  - Draw a circle on the chalkboard, and divide it into sections. Discuss that each section is a fractional part of the whole.
  - Discuss how students can use fractions in everyday situations.

SUGGESTED ACTIVITIES

F. Discuss information and assignment sheets

1. Use Information Sheet, Section I, to review the terms and definitions associated with Understanding Fractions.

2. Explain how to identify numerators and denominators in a given fraction; use Information Sheet, Section II.

   - Put examples on the chalkboard, and have the students identify numerators and denominators.
   - Have students complete Assignment Sheet #1.

3. Demonstrate how to divide figures to represent given fractions, using Information Sheet, Section III.

   - Put examples on the chalkboard to show this procedure to students.
   - Have students divide figures on the chalkboard.
   - Have students complete Assignment Sheet #2.
   - Discuss answers in class.

4. Discuss using fractions to solve story problems; use Information Sheet, Section IV.

   - Put examples of story problems and solutions on the chalkboard.
   - Have students work on sample story problems at their seats.
   - Have students complete Assignment Sheet #3.
   - Discuss answers in class.

G. Give test

H. Critique test and discuss in class

I. Reteach and retest as necessary

III. Unit references

Spann, Margaret. *Vocational Related Math.* Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

UNDERSTANDING FRACTIONS
UNIT I

SUPPLEMENT #1 — FRACTION WORD-FIND PUZZLE

Find the list of words below in the puzzle; you will only find them: backwards, frontwards, upside-down.

FRACTION	MULTIPLICATION
DENOMINATOR	DIVISION
NUMERATOR	RECIPROCAL
ADDITION	NUMBERS
SUBTRACTION	MIXED NUMBERALS

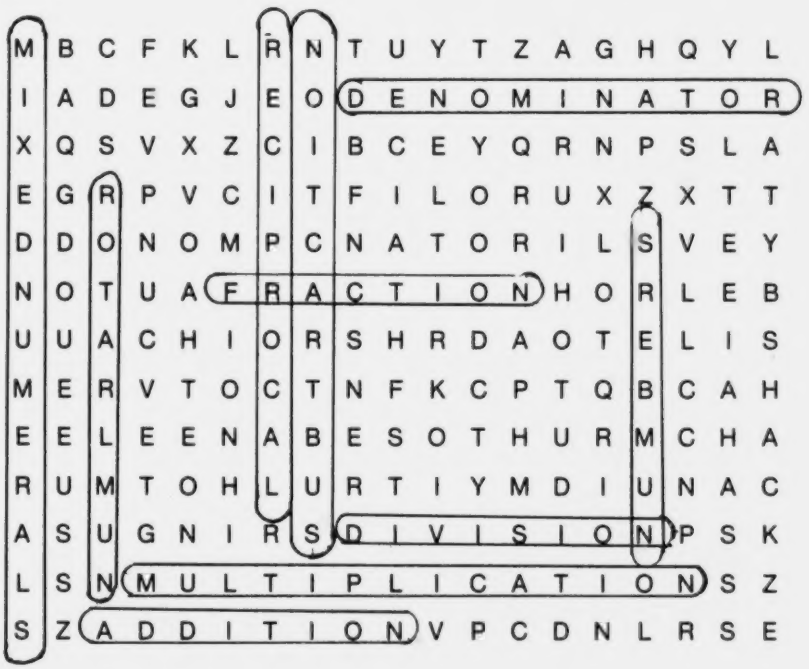
M B C F K L R N T U Y T Z A G H Q Y L
I A D E G J E O D E N O M I N A T O R
X Q S V X Z C I B C E Y Q R N P S L A
E G R P V C I T F I L O R U X Z X T T
D D O N O M P C N A T O R I L S V E Y
N O T U A F R A C T I O N H O R L E B
U U A C H I O R S H R D A O T E L I S
M E R V T O C T N F K C P T Q B C A H
E E L E E N A B E S O T H U R M C H A
R U M T O H L U R T I Y M D I U N A C
A S U G N I R S D I V I S I O N P S K
L S N M U L T I P L I C A T I O N S Z
S Z A D D I T I O N V P C D N L R S E

UNDERSTANDING FRACTIONS
UNIT I

SUPPLEMENT #2 — ANSWER KEY FOR
FRACTION WORD-FIND PUZZLE

Find the list of words below in the puzzle; you will only find them: backwards, frontwards, upside-down.

FRACTION
DENOMINATOR
NUMERATOR
ADDITION
SUBTRACTION
MULTIPLICATION
DIVISION
RECIPROCAL
NUMBERS
MIXED NUMBERALS


M B C F K L R N T U Y T Z A G H Q Y L
I A D E G J E O D E N O M I N A T O R
X Q S V X Z C I B C E Y Q R N P S L A
E G R P V C I T F I L O R U X Z X T T
D D O N O M P C N A T O R I L S V E Y
N O T U A F R A C T I O N H O R L E B
U U A C H I O R S H R D A O T E L I S
M E R V T O C T N F K C P T Q B C A H
E E L E E N A B E S O T H U R M C H A
R U M T O H L U R T I Y M D I U N A C
A S U G N I R S D I V I S I O N P S K
L S N M U L T I P L I C A T I O N S Z
S Z A D D I T I O N V P C D N L R S E

UNDERSTANDING FRACTIONS
UNIT I

PRETEST

1. Match these terms to the correct definition.

   _____a. Tells what part of a whole thing

   _____b. Tells into how many equal parts the whole thing is divided

   _____c. Tells how many equal parts of the whole thing are being considered

   1. Numerator
   2. Fraction
   3. Denominator

2. Identify the numerator and denominator in the fraction

   $\frac{9}{16}$

   a. 9 _____

   b. 16 _____

3. Divide and shade these three figures to represent the given fractions.

   a. $\frac{4}{5}$

   b. $\frac{1}{4}$

   c. $\frac{6}{8}$

4. Alex has seven crates of candy; three of these crates are damaged.

   a. Draw figures representing the crates

PRETEST

b. Shade the damaged crates.

c. What part of the crates were damaged? Express the answer as a fraction.

d. What part of the crates were good? Express the answer as a fraction.

UNDERSTANDING FRACTIONS
UNIT I

ANSWERS TO PRETEST

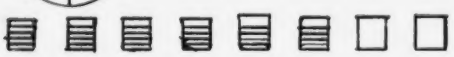
1. a. 2
   b. 1
   c. 3

2. a. numerator
   b. denominator

3. Answers may vary on some figures

   a.

   b.

   c. 

4. a.

   b.

   c. $\frac{3}{7}$

   d. $\frac{4}{7}$

UNDERSTANDING FRACTIONS
UNIT I

INFORMATION SHEET

I. Terms and definitions

A. Fraction — Tells what part of a whole thing

B. Numerator — Tells how many equal parts of the whole thing are being considered

C. Denominator — Tells into how many equal parts the whole thing is divided

II. Parts of a fraction

A. Numerator — Top number

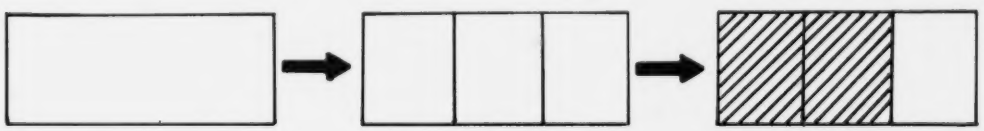
B. Fraction line — Indicates division

C. Denominator — Bottom number

EXAMPLE: $\frac{3}{4}$ numerator / fraction line / denominator

III. Diagram — A fraction can be represented by a shaded figure

EXAMPLE: $\frac{2}{3}$



IV. Story problems using diagrams

A. Draw figures to represent all the items

B. Shade the part being considered

UNDERSTANDING FRACTIONS
UNIT I

ASSIGNMENT SHEET #1 — FRACTION PARTS

NAME _____ SCORE _____

1. In the following fractions, identify the numerator and denominator of each by filling in the blanks.

   a. In the fraction $\frac{5}{7}$, the numerator is _____ and the denominator is _____.

   b. In the fraction $\frac{8}{18}$, 8 is the _____ and 18 is the _____.

   c. In the fraction $\frac{1}{3}$, what is the numerator? _____ denominator? _____

2. Write fractions which fit the following statements.

   a. A fraction with a denominator of 17 and numerator of 10.

   b. A fraction with a numerator of 16 and a denominator of 37.

3. A man cuts a pie into 8 equal pieces and then eats 1 of the 8 pieces.

   a. Which number represents the numerator?

   b. Which number represents the denominator?

   c. What fractional part of the pie did the man eat?

UNDERSTANDING FRACTIONS
UNIT I

ASSIGNMENT SHEET #2 — IDENTIFY AND DRAW FRACTIONAL PARTS

NAME _____ SCORE _____

1. Match the fractions with the correct shaded figures. There are more figures than fractions.

_____a. $\frac{4}{8}$

_____b. $\frac{2}{2}$

_____c. $\frac{6}{16}$

_____d. $\frac{3}{7}$

_____e. $\frac{5}{5}$

_____f. $\frac{1}{2}$

_____g. $\frac{2}{7}$

_____h. $\frac{5}{6}$

_____i. $\frac{1}{4}$

_____j. $\frac{2}{3}$

_____k. $\frac{7}{8}$

_____l. $\frac{3}{5}$

_____m. $\frac{2}{8}$

_____n. $\frac{3}{3}$

_____o. $\frac{1}{5}$

1.

2.

3.

4.

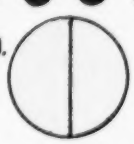
5.

6.

7.

8.

9.

10. 

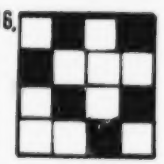
11.

12.

13.

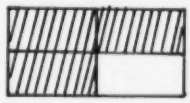
14.

15.

16. 

ASSIGNMENT SHEET #2

2. Draw a suitable figure to represent each of the following fractions.

EXAMPLE: $\frac{3}{4}$ 

a. $\frac{1}{2}$

b. $\frac{3}{4}$

c. $\frac{2}{3}$

d. $\frac{1}{4}$

e. $\frac{7}{8}$

f. $\frac{5}{16}$

g. $\frac{3}{3}$

h. $\frac{2}{4}$

i. $\frac{3}{8}$

j. $\frac{13}{16}$

UNDERSTANDING FRACTIONS
UNIT I

ASSIGNMENT SHEET #3 — STORY PROBLEMS

NAME _____ SCORE _____

Directions: For each problem below, a) write the correct fraction and b) draw a figure which represents the fraction.

1. Mrs. Meade baked a cake in which 5 eggs were used. What part of a dozen eggs were used?

   a. b.

2. The chairman of the sophomore dance gave Mitch 8 tickets. Mitch sold 3 of them. What fractional part of the tickets did he sell?

   a. b.

3. A foot has 12 inches. What fractional part of a foot is 10 inches?

   a. b.

4. A dollar contains 4 quarters. What fractional part of a dollar is 1 quarter?

   a. b.

5. A $5 bill contains five $1 bills. What fractional part of a $5 bill is $4?

   a. b.

UNDERSTANDING FRACTIONS
UNIT I

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. 5, 7
   b. numerator, denominator
   c. 1, 3

2. a. $^{10}/_{17}$
   b. $^{16}/_{37}$

3. a. 1
   b. 8
   c. $^{1}/_{8}$

Assignment Sheet #2

1. a. 4
   b. 10
   c. 16
   d. 6
   e. 9
   f. 3
   g. 15
   h. 14
   i. 2
   j. 11
   k. 13
   l. 12
   m. 1
   n. 5
   o. 7

2. Teacher evaluation

Assignment Sheet #3

1. $^{5}/_{12}$
2. $^{3}/_{8}$
3. $^{10}/_{12}$
4. $^{1}/_{4}$
5. $^{4}/_{5}$

Figures will vary

UNDERSTANDING FRACTIONS
UNIT I

TEST

NAME _____ SCORE _____

1. Match these terms to the correct definition.

_____a. Tells into how many equal parts the whole thing is divided	1. Fraction
_____b. Tells how many equal parts of the whole thing are being considered	2. Denominator
_____c. Tells what part of a whole thing	3. Numerator

2. Identify the numerator and denominator in the fraction

$\frac{4}{7}$

a. 4 — _____

b. 7 — _____

3. Divide and shade these six figures to represent the given fractions.

a. $\frac{1}{3}$

b. $\frac{1}{2}$

c. $\frac{4}{8}$

d. $\frac{2}{3}$

e. $\frac{5}{6}$

f. $\frac{4}{4}$

TEST

4. A man has six apples, four of the apples have worms.

   a. Draw figures representing the apples.

   b. Shade the bad apples.

   c. What part of the apples were bad? Express the answer as a fraction.

   d. What part of the apples were good? Express the answer as a fraction.

UNDERSTANDING FRACTIONS
UNIT I

ANSWERS TO TEST

1. a. 2
   b. 3
   c. 1

2. a. numerator
   b. denominator

3. Answers may vary on some figures.

4. a.

   b.

   c. 4/6
   d. 2/6

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

UNIT OBJECTIVE

After completing this unit, the student should be able to distinguish between proper, improper, and mixed fractions; and convert fractions to their equivalents. This ability will be evidenced by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Distinguish between proper, improper, and mixed fractions by labeling twenty different numbers.
2. Write five different fractions which are equivalent to the number one.
3. Write two different equivalent fractions for each of ten given fractions.
4. Rename six fractions as equivalent fractions with a given denominator.

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

SUGGESTED ACTIVITIES

I. Unit contents

- A. Objective sheet
- B. Suggested activities
- C. Pretest
- D. Answers to pretest
- E. Information sheets
- F. Assignment sheets
  1. Assignment Sheet #1 — Identifying Fractions
  2. Assignment Sheet #2 — Equivalent Fractions
  3. Assignment Sheet #3 — Review
- G. Answers to assignment sheets
- H. Test
- I. Answers to test

II. Instructor's guide

- A. Order (or obtain) materials to supplement unit
- B. Give pretest
- C. Critique pretest and go over results in class

  (NOTE: Be sure to take up pretests after discussing them in class. Students who score 85 percent or higher on the pretest do not need to study this unit.)

- D. Provide students with copies of unit
- E. Discuss unit and specific objectives

  - Stress that this unit picks up where the last one concluded. This unit will help them understand proper, improper, and mixed fractions. It will also help them understand how to convert fractions to their equivalents.

SUGGESTED ACTIVITIES

F. Discuss information and assignment sheets

1. Demonstrate how to distinguish among proper, improper, and mixed fractions; use Information Sheet, Section I.

   - Put examples of each type of fractions on the chalkboard; label each according to type.
   - Put examples of denominators on the chalkboard, and have students furnish numerators to create proper fractions; have students write examples in their notes and label them "proper fractions."
   - Put examples of denominators on the chalkboard, and have students furnish numerators to create improper fractions; have students write examples in their notes and label them "improper fractions."
   - Put examples of denominators on the chalkboard, and have students furnish numerators to create mixed fractions; have students write examples in their notes and label them "mixed fractions."
   - Have students complete Assignment Sheet #1.

2. Explain that fractional names for 1 have the same numerator and denominator; use Information Sheet, Section II.

   - Put a few examples of fractions that equal one on the chalkboard.

3. Discuss how to write equivalent fractions with given denominators using Information Sheet, Section III.

   - Put examples on the chalkboard, and discuss examples. Have students take notes.

4. Using Information Sheet, Section IV, explain how to rename fractions as equivalent fractions with a given denominator.

   - Put examples on the chalkboard, and have students take notes.
   - Have students complete Assignment Sheet #2.
   - Discuss answers in class.
   - Have students complete Assignment Sheet #3.
   - Discuss answers in class.

G. Give test

H. Critique test and discuss in class

SUGGESTED ACTIVITIES

I. Reteach and retest as necessary

III. Unit references

Spann, Margaret. *Related Vocational Math*. Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

PRETEST

NAME _____ SCORE _____

1. Distinguish among proper, improper, and mixed fractions by labeling the following numbers "P" for proper, "I" for improper, or "M" for mixed numbers.

   a. $\frac{2}{3}$ _____

   b. $\frac{9}{4}$ _____

   c. $\frac{16}{3}$ _____

   d. $2\frac{2}{3}$ _____

   e. $\frac{6}{6}$ _____

   f. $1\frac{1}{3}$ _____

   g. $\frac{15}{16}$ _____

   h. $10\frac{6}{13}$ _____

   i. $\frac{23}{32}$ _____

   j. $8\frac{10}{13}$ _____

2. Write three different fractions that are equivalent to the number one.

   a. _____

   b. _____

   c. _____

3. Write two different equivalent fractions for each of the given fractions.

   a. $\frac{1}{4}$

   b. $\frac{6}{8}$

   c. $\frac{1}{3}$

d. $\frac{1}{2}$

e. $\frac{3}{5}$

4. Rename each of the following fractions as indicated.

a. $\frac{1}{3} = \frac{\quad}{9}$

b. $\frac{4}{5} = \frac{\quad}{35}$

c. $\frac{12}{14} = \frac{\quad}{42}$

d. $\frac{3}{3} = \frac{\quad}{5}$

e. $\frac{3}{7} = \frac{\quad}{21}$

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

ANSWERS TO PRETEST

1. a. P
   b. I
   c. I
   d. M
   e. I
   f. M
   g. P
   h. M
   i. P
   j. M

2. Answers may vary; numerator and denominator must be the same.

3. Answers may vary.

4. a. 3
   b. 28
   c. 36
   d. 5
   e. 9

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

INFORMATION SHEET

I. Types of fractions

A. Proper — The numerator is smaller than the denominator

EXAMPLE: $\frac{3}{9}$

B. Improper — The numerator is larger than or equal to the denominator

EXAMPLES: $\frac{8}{6}, \frac{7}{7}$

C. Mixed — Contains a whole number and a fraction

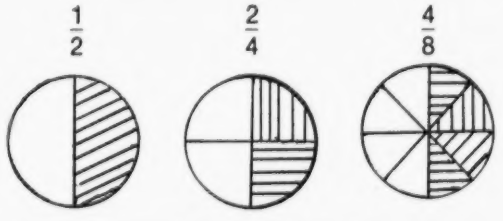
EXAMPLES: $9\ \frac{1}{2}, 4\ \frac{2}{3}, 1\ \frac{7}{8}$

II. Fractional names for 1 — A fraction in which the numerator and denominator are the same (equal)

EXAMPLES: $\frac{4}{4} = 1, \frac{5}{5} = 1, \frac{25}{25} = 1$

III. Equivalent fractions — Two or more fractions which look different, and are read differently but mean the same part of the whole thing

EXAMPLE:



(NOTE: All three circles have different names, but all three shaded areas are equal.)

IV. Equivalent fractions with a given denominator

A. Determine by what number the first denominator must be multiplied or divided to get the second denominator

B. Perform this same operation with the same number on the numerator

EXAMPLES: $\frac{1}{4} \times \frac{2}{2} = \frac{2}{8}$

$\frac{12}{15} \div \frac{3}{3} = \frac{4}{5}$

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

ASSIGNMENT SHEET #1 — IDENTIFYING FRACTIONS

NAME _____ SCORE ___ _____

1. Identify the following numbers by placing "P" for proper fraction, "I" for improper fraction, or "M" for mixed number in the blank to the left.

_____a. $\frac{1}{2}$

_____b. $\frac{7}{8}$

_____c. $\frac{16}{2}$

_____d. $3\frac{1}{8}$

_____e. $\frac{1}{4}$

_____f. $\frac{1}{1}$

_____g. $\frac{7}{3}$

_____h. $8\frac{1}{3}$

_____i. $\frac{4}{4}$

_____j. $9\frac{3}{3}$

_____k. $5\frac{1}{2}$

_____l. $\frac{9}{8}$

_____m. $\frac{9}{9}$

_____n. $\frac{1}{7}$

_____o. $16\frac{4}{4}$

2. Use the indicated denominators and furnish numerators to complete the following problems.

   a. Complete these to make proper fractions.

      1) _____ $\frac{}{8}$

      2) _____ $\frac{}{10}$

      3) _____ $\frac{}{7}$

      4) _____ $\frac{}{2}$

ASSIGNMENT SHEET #1

5) ____ / 30

b. Complete these to make improper fractions.

1) ____ / 3

2) ____ / 5

3) ____ / 6

4) ____ / 9

5) ____ / 4

c. Complete these to make mixed numbers.

1) ____ / 2

2) ____ / 3

3) ____ / 10

4) ____ / 16

5) ____ / 32

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

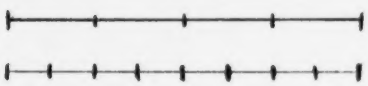
ASSIGNMENT SHEET #2 — EQUIVALENT FRACTIONS

NAME _____ SCORE _____

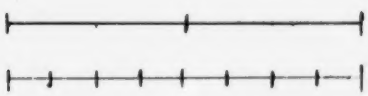
1. Illustrate each set of fractions.

EXAMPLE: $^4/_8$, $^2/_4$, $^1/_2$

a. $^1/_4$, $^2/_8$



b. $^4/_8$, $^1/_2$



c. $^1/_3$, $^2/_6$

d. $^2/_5$, $^4/_{10}$

ASSIGNMENT SHEET #2

2. Change each of the following fractions to a new fraction with the indicated denominator.

EXAMPLE: $\frac{1}{5} = \frac{\quad}{25}$ $\qquad \frac{1}{5} \times \frac{5}{5} = \frac{5}{25}$

a. $\frac{1}{2} = \frac{\quad}{4}$

b. $\frac{3}{5} = \frac{\quad}{25}$

c. $\frac{30}{5} = \frac{\quad}{1}$

d. $\frac{4}{4} = \frac{\quad}{1}$

e. $\frac{3}{8} = \frac{\quad}{24}$

f. $\frac{33}{36} = \frac{\quad}{12}$

g. $\frac{5}{7} = \frac{\quad}{14}$

h. $\frac{15}{24} = \frac{\quad}{8}$

i. $\frac{14}{21} = \frac{\quad}{3}$

j. $\frac{10}{11} = \frac{\quad}{121}$

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

ASSIGNMENT SHEET #3 — REVIEW

NAME _____ SCORE _____

1. Use a "P" for proper, "I" for improper, or "M" for mixed numbers to identify the following.

_____a. $\frac{1}{5}$

_____b. $6\frac{2}{3}$

_____c. $\frac{7}{5}$

_____d. $\frac{4}{1}$

_____e. $3\frac{1}{5}$

_____f. $\frac{2}{3}$

_____g. $2\frac{1}{2}$

_____h. $\frac{8}{4}$

_____i. $8\frac{1}{3}$

_____j. $\frac{4}{7}$

2. Rename each of the following as indicated.

a. $\frac{2}{3} = \frac{\quad}{6}$

b. $\frac{1}{5} = \frac{\quad}{10}$

c. $\frac{3}{4} = \frac{\quad}{12}$

d. $\frac{3}{4} = \frac{\quad}{8}$

e. $\frac{7}{9} = \frac{\quad}{27}$

f. $\frac{4}{8} = \frac{\quad}{4}$

g. $\frac{1}{3} = \frac{\quad}{9}$

h. $\frac{4}{10} = \frac{\quad}{5}$

i. $\frac{1}{10} = \frac{\quad}{100}$

j. $\frac{10}{25} = \frac{\quad}{5}$

3. Write ten different fractions for the numeral one.

a.

b.

ASSIGNMENT SHEET #3

c.

d.

e.

f.

g.

h.

i.

j.

4. Write three different equivalent fractions for each of the following fractions.

a. $\frac{1}{3}$ =

b. $\frac{4}{5}$ =

c. $\frac{4}{8}$ =

d. $\frac{5}{10}$ =

e. $\frac{1}{6}$ =

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

ANSWERS TO ASSIGNMENT SHEETS

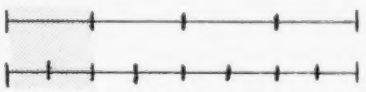
Assignment Sheet #1

1. a. P
   b. P
   c. I
   d. M
   e. P
   f. I
   g. I
   h. M
   i. I
   j. M
   k. M
   l. I
   m. I
   n. P
   o. M

2. a. Answer may vary — Numerators must be smaller than given denominators
   b. Answers may vary — Numerators must be larger than or equal to denominators
   c. Answers may vary

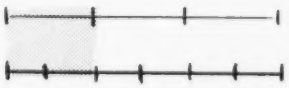
Assignment Sheet #2

1. a. $\frac{1}{4}$
   $\frac{2}{8}$

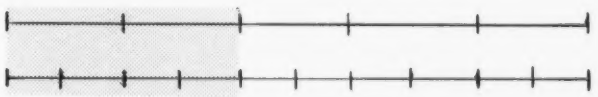


   b. $\frac{4}{8}$
   $\frac{1}{2}$

   c. $\frac{1}{3}$
   $\frac{2}{6}$



   d. $\frac{2}{5}$
   $\frac{4}{10}$



2. a. 2
   b. 15
   c. 6
   d. 1
   e. 9
   f. 11
   g. 10
   h. 5
   i. 2
   j. 110

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #3

1.

a.	P	f.	P
b.	M	g.	M
c.	I	h.	I
d.	I	i.	M
e.	M	j.	P

2.

a.	4	f.	2
b.	2	g.	3
c.	9	h.	2
d.	6	i.	10
e.	21	j.	2

3. Answers may vary

4. Answers may vary

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

TEST

NAME _____ SCORE _____

1. Distinguish between proper, improper, and mixed fractions by labeling the following numbers "P" for proper, "I" for improper, or "M" for mixed numbers.

_____a. $\frac{1}{3}$

_____b. $\frac{9}{7}$

_____c. $7\frac{1}{5}$

_____d. $\frac{7}{8}$

_____e. $\frac{9}{9}$

_____f. $7\frac{4}{9}$

_____g. $16\frac{1}{3}$

_____h. $\frac{4}{9}$

_____j. $\frac{16}{16}$

_____k. $\frac{10}{25}$

_____l. $\frac{16}{8}$

_____m. $\frac{2}{5}$

_____n. $\frac{4}{2}$

_____o. $8\frac{1}{2}$

_____p. $2\frac{1}{8}$

_____q. $\frac{1}{8}$

_____r. $\frac{99}{1}$

_____s. $\frac{8}{8}$

_____t. $3\frac{3}{3}$

2. Write five different fractions which are equivalent to the number one.

a.

b.

TEST

c.

d.

e.

3. Write two different equivalent fractions for each of the given fractions.

a. $\frac{1}{5} =$

b. $\frac{4}{8} =$

c. $\frac{2}{3} =$

d. $\frac{4}{5} =$

e. $\frac{3}{8} =$

f. $\frac{5}{9} =$

g. $\frac{7}{14} =$

h. $\frac{10}{16} =$

i. $\frac{1}{3} =$

j. $\frac{12}{18} =$

4. Rename each of the following fractions as indicated.

a. $\frac{2}{3} = \frac{\quad}{27}$

TEST

b. $\frac{4}{5} = \frac{\quad}{20}$

c. $\frac{1}{8} = \frac{\quad}{24}$

d. $\frac{9}{9} = \frac{\quad}{1}$

e. $\frac{8}{8} = \frac{\quad}{4}$

f. $\frac{16}{20} = \frac{\quad}{10}$

PROPER, IMPROPER, MIXED, AND EQUIVALENT FRACTIONS
UNIT II

ANSWERS TO TEST

1.
a.	P	k.	P
b.	I	l.	I
c.	M	m.	P
d.	P	n.	I
e.	I	o.	M
f.	M	p.	M
g.	M	q.	P
h.	P	r.	I
i.	M	s.	I
j.	I	t.	M

2. Answers will vary

3. Answers will vary

4.
a. 18
b. 16
c. 3
d. 1
e. 4
f. 8

CONVERTING AND REDUCING FRACTIONS
UNIT III

UNIT OBJECTIVE

After completing this unit, the student should be able to convert mixed numbers to improper fractions and improper fractions to mixed numbers. He should be able to reduce fractions to lowest terms. This ability will be evidenced by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Convert ten mixed numbers to improper fractions expressed in lowest terms.
2. Convert ten improper fractions to mixed numbers or whole numbers expressed in lowest terms.
3. Reduce twenty fractions to lowest terms.

CONVERTING AND REDUCING FRACTIONS
UNIT III

SUGGESTED ACTIVITIES

I. Unit contents

A. Objective sheet

B. Suggested activities

C. Pretest

D. Answers to pretest

E. Information sheets

F. Assignment sheets

1. Assignment Sheet #1 — Fraction Conversion

2. Assignment Sheet #2 — Reducing Fractions

3. Assignment Sheet #3 — Review

G. Answers to assignment sheets

H. Test

I. Answers to test

II. Instructor's guide

A. Order (or obtain) materials to supplement unit

B. Give pretest

C. Critique pretest and go over results in class

(NOTE: Be sure to take up pretests after discussing them in class. Students who score 85 percent or higher on the pretest do not need to study this unit.)

D. Provide students with copies of unit

E. Discuss unit and specific objectives

- Explain that studying this unit will teach students how to convert mixed numbers to improper fraction expressed in lowest terms as well as convert improper fractions to mixed numbers or whole numbers expressed in lowest terms.

SUGGESTED ACTIVITIES

F. Discuss information and assignment sheets

1. Explain how to convert mixed numbers to improper fractions expressed in lowest terms; use Information Sheet, Section I.

   - Put examples on the chalkboard, and have students take notes.
   - Put some sample problems on the chalkboard for the students to practice in their notes; go over answers in class.

2. Explain how to convert improper fractions to mixed numbers or whole numbers expressed in lowest terms; use Information Sheet, Section II.

   - Put examples on the chalkboard, and have students take notes.
   - Put some sample problems on the chalkboard for the students to practice in their notes; go over answers in class.
   - Have students complete Assignment Sheet #1.
   - Go over answers in class.

3. Discuss how to reduce fractions to lowest terms using Information Sheet, Section III.

   - Put some examples on the chalkboard to demonstrate this process; have students put these examples in their notes.
   - Have students complete Assignment Sheet #2.
   - Go over answers in class.
   - Have students complete Assignment Sheet #3.
   - Go over answers in class.

G. Give test

H. Critique test and discuss in class

I. Reteach and retest as necessary

III. Unit references

Spann, Margaret. *Related Vocational Math*. Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

CONVERTING AND REDUCING FRACTIONS
UNIT III

PRETEST

NAME _____ SCORE _____

1. Convert the following mixed numbers to improper fractions expressed in lowest terms.

   a. $4\frac{4}{5} =$

   b. $3\frac{2}{3} =$

   c. $5\frac{6}{7} =$

   d. $1\frac{13}{15} =$

   e. $12\frac{7}{8} =$

2. Convert the following improper fractions to mixed or whole numbers expressed in lowest terms.

   a. $\frac{13}{5} =$

   b. $\frac{23}{4} =$

   c. $\frac{16}{4} =$

   d. $\frac{44}{12} =$

   e. $\frac{56}{15} =$

PRETEST

3. Reduce the following fractions to lowest terms.

a. $\frac{8}{16}$ =

b. $\frac{12}{36}$ =

c. $\frac{9}{15}$ =

d. $\frac{14}{16}$ =

e. $\frac{15}{25}$ =

f. $\frac{4}{6}$ =

g. $\frac{7}{21}$ =

h. $\frac{8}{8}$ =

i. $\frac{3}{15}$ =

j. $\frac{9}{12}$ =

CONVERTING AND REDUCING FRACTIONS
UNIT III

ANSWERS TO PRETEST

1. a. $^{24}/_{5}$
   b. $^{11}/_{3}$
   c. $^{41}/_{7}$
   d. $^{28}/_{15}$
   e. $^{103}/_{8}$

2. a. $2\ ^{3}/_{5}$
   b. $5\ ^{3}/_{4}$
   c. 4
   d. $3\ ^{2}/_{3}$
   e. $3\ ^{11}/_{15}$

3. a. $^{1}/_{2}$
   b. $^{1}/_{3}$
   c. $^{3}/_{5}$
   d. $^{7}/_{8}$
   e. $^{3}/_{5}$
   f. $^{2}/_{3}$
   g. $^{1}/_{3}$
   h. 1
   i. $^{1}/_{5}$
   j. $^{3}/_{4}$

CONVERTING AND REDUCING FRACTIONS
UNIT III

INFORMATION SHEET

I. Mixed number to an improper fraction — Multiply the denominator of the fraction times the whole number and add the numerator of the fraction

EXAMPLES: $4\frac{3}{5} = \frac{(5 \times 4) + 3}{5} = \frac{23}{5}$

$7\frac{1}{2} = \frac{15}{2}$

II. Improper fraction to a mixed number — Divide the denominator into the numerator and express the remainder as a fraction

EXAMPLE: $\frac{9}{7} = 7\overline{)\begin{matrix}1\\9\\\frac{7}{2}\end{matrix}} = 1\frac{2}{7}$

(NOTE: If the denominator divides into the numerator evenly then the answer is expressed as a whole number.)

EXAMPLE: $\frac{9}{3} = 3$

III. Reduced to lowest terms — A fraction is in lowest terms if both the numerator and denominator cannot be divided by the same whole number, except one

EXAMPLES:

A. $\frac{4}{6}$

is not reduced to lowest terms because both the numerator (4) and the denominator (6) can be divided by 2

B. $\frac{2}{3}$

is reduced because the numerator (2) and the denominator (3) cannot be divided by the same number, except 1

CONVERTING AND REDUCING FRACTIONS
UNIT III

ASSIGNMENT SHEET #1 — FRACTION CONVERSION

NAME _____ SCORE _____

1. Convert each of the following mixed numbers to improper fractions. (Do not worry about reducing answers at this time.)

a. $3\frac{1}{4}$ =

b. $4\frac{1}{2}$ =

c. $7\frac{1}{3}$ =

d. $8\frac{1}{2}$ =

e. $6\frac{2}{3}$ =

f. $5\frac{1}{5}$ =

g. $4\frac{2}{3}$ =

h. $8\frac{1}{7}$ =

i. $9\frac{1}{5}$ =

j. $16\frac{2}{3}$ =

k. $2\frac{1}{2}$ =

l. $3\frac{2}{4}$ =

m. $7\frac{3}{4}$ =

n. $9\frac{2}{3}$ =

o. $5\frac{2}{3}$ =

p. $6\frac{1}{8}$ =

q. $3\frac{3}{4}$ =

r. $6\frac{4}{5}$ =

s. $4\frac{1}{3}$ =

t. $1\frac{4}{5}$ =

ASSIGNMENT SHEET #1

2. Convert each of the following improper fractions to mixed numbers. (Do not worry about reducing answers to lowest terms at this time.)

a. $\frac{16}{5}$ =

b. $\frac{12}{5}$ =

c. $\frac{17}{3}$ =

d. $\frac{8}{3}$ =

e. $\frac{9}{2}$ =

f. $\frac{5}{3}$ =

g. $\frac{7}{2}$ =

h. $\frac{9}{4}$ =

i. $\frac{17}{16}$ =

j. $\frac{11}{5}$ =

k. $\frac{19}{13}$ =

l. $\frac{8}{7}$ =

m. $\frac{75}{32}$ =

n. $\frac{24}{17}$ =

o. $\frac{13}{9}$ =

p. $\frac{7}{4}$ =

q. $\frac{9}{6}$ =

r. $\frac{4}{3}$ =

s. $\frac{15}{4}$ =

t. $\frac{16}{7}$ =

CONVERTING AND REDUCING FRACTIONS
UNIT III

ASSIGNMENT SHEET #2 — REDUCING FRACTIONS

NAME _____ SCORE _____

Directions: Reduce the following fractions to lowest terms.

1. $\frac{3}{9}$ =
2. $\frac{8}{24}$ =
3. $\frac{10}{15}$ =
4. $\frac{15}{25}$ =
5. $\frac{12}{48}$ =
6. $\frac{9}{24}$ =
7. $\frac{5}{7}$ =
8. $\frac{2}{4}$ =
9. $\frac{9}{12}$ =
10. $\frac{50}{100}$ =
11. $\frac{5}{5}$ =
12. $\frac{8}{12}$ =
13. $\frac{7}{21}$ =
14. $\frac{4}{8}$ =
15. $\frac{10}{12}$ =
16. $\frac{26}{52}$ =
17. $\frac{6}{9}$ =
18. $\frac{13}{39}$ =
19. $\frac{9}{9}$ =
20. $\frac{12}{16}$ =

CONVERTING AND REDUCING FRACTIONS
UNIT III

ASSIGNMENT SHEET #3 — REVIEW

NAME _____ SCORE _____

1. Convert the following mixed numbers to improper fractions. Reduce all answers to lowest terms.

a. $3\frac{1}{7} =$

b. $2\frac{2}{4} =$

c. $3\frac{2}{5} =$

d. $7\frac{4}{6} =$

e. $4\frac{1}{5} =$

f. $7\frac{4}{5} =$

g. $4\frac{2}{3} =$

h. $5\frac{1}{2} =$

i. $3\frac{4}{8} =$

j. $5\frac{1}{3} =$

k. $3\frac{3}{9} =$

l. $13\frac{12}{48} =$

m. $16\frac{1}{8} =$

n. $9\frac{5}{10} =$

o. $5\frac{2}{4} =$

p. $6\frac{6}{9} =$

q. $6\frac{4}{6} =$

r. $7\frac{1}{4} =$

s. $7\frac{1}{2} =$

t. $3\frac{2}{3} =$

ASSIGNMENT SHEET #3

2. Convert the following improper fractions to mixed or whole numbers. Reduce all answers to lowest terms.

a. $\frac{8}{2}$ =

b. $\frac{16}{3}$ =

c. $\frac{9}{2}$ =

d. $\frac{28}{4}$ =

e. $\frac{7}{3}$ =

f. $\frac{12}{5}$ =

g. $\frac{13}{4}$ =

h. $\frac{14}{8}$ =

i. $\frac{19}{1}$ =

j. $\frac{27}{4}$ =

k. $\frac{5}{5}$ =

l. $\frac{32}{8}$ =

m. $\frac{39}{16}$ =

n. $\frac{26}{7}$ =

o. $\frac{16}{16}$ =

p. $\frac{12}{9}$ =

q. $\frac{12}{1}$ =

r. $\frac{56}{7}$ =

s. $\frac{19}{4}$ =

t. $\frac{12}{6}$ =

3. Reduce to lowest terms.

a. $\frac{12}{36}$ =

b. $\frac{8}{3}$ =

c. $\frac{5}{15}$ =

d. $\frac{12}{48}$ =

e. $\frac{9}{24}$ =

f. $\frac{12}{21}$ =

g. $\frac{13}{26}$ =

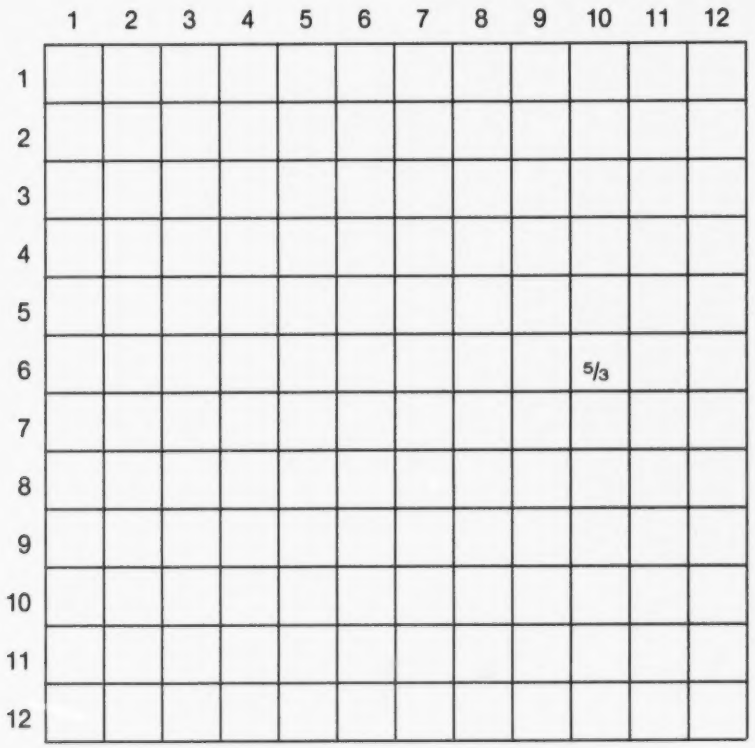
h. $\frac{6}{9}$ =

i. $\frac{8}{21}$ =

j. $\frac{4}{12}$ =

ASSIGNMENT SHEET #3

4. In the square write the fraction in lowest terms. In the example, $^{10}/_{6}$ is written $^{5}/_{3}$. Do not write as a mixed number.



CONVERTING AND REDUCING FRACTIONS
UNIT III

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. $13/4$
   b. $9/2$
   c. $22/3$
   d. $17/2$
   e. $20/3$
   f. $26/5$
   g. $14/3$
   h. $57/7$
   i. $46/5$
   j. $50/3$
   k. $5/2$
   l. $14/4$ or $7/2$
   m. $31/4$
   n. $29/3$
   o. $17/3$
   p. $49/8$
   q. $15/4$
   r. $34/5$
   s. $13/3$
   t. $9/5$

2. a. $3\ 1/5$
   b. $2\ 2/5$
   c. $5\ 2/3$
   d. $2\ 2/3$
   e. $4\ 1/2$
   f. $1\ 2/3$
   g. $3\ 1/2$
   h. $2\ 1/4$
   i. $1\ 1/16$
   j. $2\ 1/5$
   k. $1\ 6/13$
   l. $1\ 1/7$
   m. $2\ 11/32$
   n. $1\ 7/17$
   o. $1\ 4/9$
   p. $1\ 3/4$
   q. $1\ 3/6$ or $1\ 1/2$
   r. $1\ 1/3$
   s. $3\ 3/4$
   t. $2\ 2/7$

Assignment Sheet #2

1. $1/3$
2. $1/3$
3. $2/3$
4. $3/5$
5. $1/4$
6. $3/8$
7. $5/7$
8. $1/2$
9. $3/4$
10. $1/2$
11. 1
12. $2/3$
13. $1/3$
14. $1/2$
15. $5/6$
16. $1/2$
17. $2/3$
18. $1/3$
19. 1
20. $3/4$

Assignment Sheet #3

1. a. $22/7$
   b. $5/2$
   c. $17/5$
   d. $23/3$
   e. $21/5$
   f. $39/5$

ANSWERS TO ASSIGNMENT SHEETS

g. $14/3$
h. $11/2$
i. $7/2$
j. $16/3$
k. $10/3$
l. $53/4$
m. $129/8$
n. $19/2$
o. $11/2$
p. $20/3$
q. $20/3$
r. $29/4$
s. $15/2$
t. $11/3$

2. a. 4
b. $5\ 1/3$
c. $4\ 1/2$
d. 7
e. $2\ 1/3$
f. $2\ 2/5$
g. $3\ 1/4$
h. $1\ 3/4$
i. 19
j. $6\ 3/4$
k. 1
l. 4
m. $2\ 7/16$
n. $3\ 5/7$
o. 1
p. $1\ 1/3$
q. 12
r. 8
s. $4\ 3/4$
t. 2

3. a. $1/3$
b. $2\ 2/3$
c. $1/3$
d. $1/4$
e. $3/8$
f. $4/7$
g. $1/2$
h. $2/3$
i. $8/21$
j. $1/3$

4.

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	$1/2$	1	$3/2$	2	$5/2$	3	$7/2$	4	$9/2$	5	$11/2$	6
3	$1/3$	$2/3$	1	$4/3$	$5/3$	2	$7/3$	$8/3$	3	$10/3$	$11/3$	4
4	$1/4$	$1/2$	$3/4$	1	$5/4$	$3/2$	$7/4$	2	$9/4$	$5/2$	$11/4$	3
5	$1/5$	$2/5$	$3/5$	$4/5$	1	$6/5$	$7/5$	$8/5$	$9/5$	2	$11/5$	$12/5$
6	$1/6$	$1/3$	$1/2$	$2/3$	$5/6$	1	$7/6$	$4/3$	$3/2$	$5/3$	$11/6$	2
7	$1/7$	$2/7$	$3/7$	$4/7$	$5/7$	$6/7$	1	$8/7$	$9/7$	$10/7$	$11/7$	$12/7$
8	$1/8$	$1/4$	$3/8$	$1/2$	$5/8$	$3/4$	$7/8$	1	$9/8$	$5/4$	$11/8$	$3/2$
9	$1/9$	$2/9$	$1/3$	$4/9$	$5/9$	$2/3$	$7/9$	$8/9$	1	$10/9$	$11/9$	$4/3$
10	$1/10$	$1/5$	$3/10$	$2/5$	$1/2$	$3/5$	$7/10$	$4/5$	$9/10$	1	$11/10$	$6/5$
11	$1/11$	$2/11$	$3/11$	$4/11$	$5/11$	$6/11$	$7/11$	$8/11$	$9/11$	$10/11$	1	$12/11$
12	$1/12$	$1/6$	$1/4$	$1/3$	$5/12$	$1/2$	$7/12$	$2/3$	$3/4$	$5/6$	$11/12$	1

CONVERTING AND REDUCING FRACTIONS
UNIT III

TEST

NAME _____ SCORE _____

1. Convert the following mixed numbers to improper fractions expressed in lowest terms.

   a. $3\frac{1}{2} =$ _____

   b. $4\frac{2}{4} =$

   c. $3\frac{6}{9} =$

   d. $8\frac{2}{3} =$

   e. $4\frac{1}{5} =$

   f. $12\frac{4}{6} =$

   g. $8\frac{2}{5} =$

   h. $7\frac{4}{7} =$

   i. $9\frac{1}{3} =$

   j. $13\frac{13}{39} =$

2. Convert the following improper fractions to mixed numbers or whole numbers expressed in lowest terms.

   a. $\frac{12}{4} =$

   b. $\frac{16}{3} =$

   c. $\frac{22}{4} =$

   d. $\frac{8}{3} =$

   e. $\frac{9}{4} =$

   f. $\frac{13}{2} =$

   g. $\frac{73}{20} =$

   h. $\frac{12}{5} =$

   i. $\frac{16}{5} =$

   j. $\frac{91}{13} =$

TEST

3. Reduce the following fractions to lowest terms.

a. $\frac{4}{6}$ =

b. $\frac{4}{10}$ =

c. $\frac{2}{2}$ =

d. $\frac{8}{12}$ =

e. $\frac{3}{9}$ =

f. $\frac{7}{14}$ =

g. $\frac{6}{8}$ =

h. $\frac{8}{12}$ =

i. $\frac{8}{32}$ =

j. $\frac{12}{50}$ =

k. $\frac{2}{6}$ =

l. $\frac{4}{16}$ =

m. $\frac{6}{9}$ =

n. $\frac{2}{16}$ =

o. $\frac{2}{8}$ =

p. $\frac{8}{10}$ =

q. $\frac{6}{6}$ =

r. $\frac{12}{16}$ =

s. $\frac{16}{32}$ =

t. $\frac{121}{132}$ =

CONVERTING AND REDUCING FRACTIONS
UNIT III

ANSWERS TO TEST

1. a. $7/2$
   b. $9/2$
   c. $11/3$
   d. $26/3$
   e. $21/5$
   f. $38/3$
   g. $42/5$
   h. $53/7$
   i. $28/3$
   j. $40/3$

2. a. 3
   b. $5\ 1/3$
   c. $5\ 1/2$
   d. $2\ 2/3$
   e. $2\ 1/4$
   f. $1/2$
   g. $3\ 13/20$
   h. $2\ 2/5$
   i. $3\ 1/5$
   j. 7

3. a. $2/3$
   b. $2/5$
   c. 1
   d. $2/3$
   e. $1/3$
   f. $1/2$
   g. $3/4$
   h. $2/3$
   i. $1/4$
   j. $6/25$
   k. $1/3$
   l. $1/4$
   m. $2/3$
   n. $1/8$
   o. $1/4$
   p. $4/5$
   q. 1
   r. $3/4$
   s. $1/2$
   t. $11/12$

ADDING FRACTIONS
UNIT IV

UNIT OBJECTIVE

After completing this unit, the student should be able to add fractions and mixed numbers with all answers expressed in lowest terms. This ability will be evidenced by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Add and reduce to lowest terms five problems with like fractions.
2. Add and reduce to lowest terms five problems involving unlike fractions.
3. Add and reduce to lowest terms fifteen problems with mixed numbers.
4. Solve ten word problems involving fractions and mixed numbers.

ADDING FRACTIONS
UNIT IV

SUGGESTED ACTIVITIES

I. Unit contents

A. Objective sheet

B. Suggested activities

C. Pretest

D. Answers to pretest

E. Information sheets

F. Assignment sheets

1. Assignment Sheet #1 — Like Fractions
2. Assignment Sheet #2 — Unlike Fractions
3. Assignment Sheet #3 — Mixed Numbers
4. Assignment Sheet #4 — More Mixed Numbers

G. Answers to assignment sheets

H. Test

I. Answers to test

II. Instructor's guide

A. Order (or obtain) materials to supplement unit

B. Give pretest

C. Critique pretest and go over results in class

(NOTE: Be sure to take up pretests after discussing them in class. Students who score 85 percent or higher on the pretest do not need to study this unit.)

D. Provide students with copies of unit

E. Discuss unit and specific objectives

- Discuss that students will learn to add fractions and mixed numbers with all answers expressed in lowest terms. Give students some examples of how they will use this information in life situations.

SUGGESTED ACTIVITIES

F. Discuss information and assignment sheets

1. Explain how to add like fractions using Information Sheet, Section I.

   - Write examples of like fractions on the chalkboard, and demonstrate how to add these types of fractions; have students take notes.
   - Put some sample problems on the chalkboard for the students to practice adding.
   - Go over the sample problems.
   - Have students complete Assignment Sheet #1.
   - Discuss the answers in class.

2. Discuss how to add unlike fractions using Information Sheet, Section II.

   - Write examples of unlike fractions on the chalkboard, and demonstrate how to add these types of fractions; have students take notes.
   - Put some sample problems on the chalkboard for the students to practice adding.
   - Go over the sample problems.
   - Have students complete Assignment Sheet #2.
   - Go over answers in class.

3. Demonstrate how to add mixed numbers using Information Sheet, Section III.

   - Write examples of mixed fractions on the chalkboard, and demonstrate how to add these types of fractions; have students take notes.
   - Put some sample problems on the chalkboard for the students to practice adding.
   - Go over the sample problems.
   - Have students complete Assignment Sheet #3.
   - Go over answers in class.

4. Discuss how to solve story problems that contain fractions; use Information Sheet, Section IV.

   - Work through several story problems on the chalkboard to show students the proper procedure for solving story problems.

SUGGESTED ACTIVITIES

- Write several story problems on the chalkboard for the students to practice.
- Discuss the answers in class.
- Have students complete Assignment Sheet #4.
- Discuss answers in class.

G. Give test

H. Critique test and discuss in class

I. Reteach and retest as necessary

III. Unit references

Spann, Margaret. *Related Vocational Math*. Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

ADDING FRACTIONS
UNIT IV

PRETEST

NAME _____ SCORE _____

1. Add and reduce to lowest terms.

a. $\frac{1}{4} + \frac{2}{4} =$ _____

b. $\frac{3}{5} + \frac{1}{5} =$ _____

c. $\frac{2}{7} + \frac{3}{7} =$ _____

d. $\frac{4}{6} + \frac{8}{6} =$ _____

e. $\frac{6}{9} + \frac{8}{9} =$ _____

2. Add and reduce to lowest terms.

a. $\frac{3}{4} + \frac{1}{3} =$ _____

b. $\frac{7}{8} + \frac{3}{5} =$ _____

c. $\frac{5}{6} + \frac{6}{7} =$ _____

d. $\frac{2}{3} + \frac{5}{7} =$ _____

e. $\frac{14}{15} + \frac{3}{5} =$ _____

PRETEST

3. Add and reduce to lowest terms.

a. $\begin{array}{r} \frac{4}{5} \\ +\ 4\ \frac{2}{10} \\ \hline \end{array}$

b. $\begin{array}{r} 3\ \frac{2}{3} \\ +\ 5\ \frac{1}{5} \\ \hline \end{array}$

c. $\begin{array}{r} 4\ \frac{5}{6} \\ +\ 7\ \frac{3}{4} \\ \hline \end{array}$

d. $\begin{array}{r} 5\ \frac{6}{7} \\ +\ 2\ \frac{4}{5} \\ \hline \end{array}$

e. $\begin{array}{r} 4\ \frac{6}{8} \\ +\ 2\ \frac{1}{4} \\ \hline \end{array}$

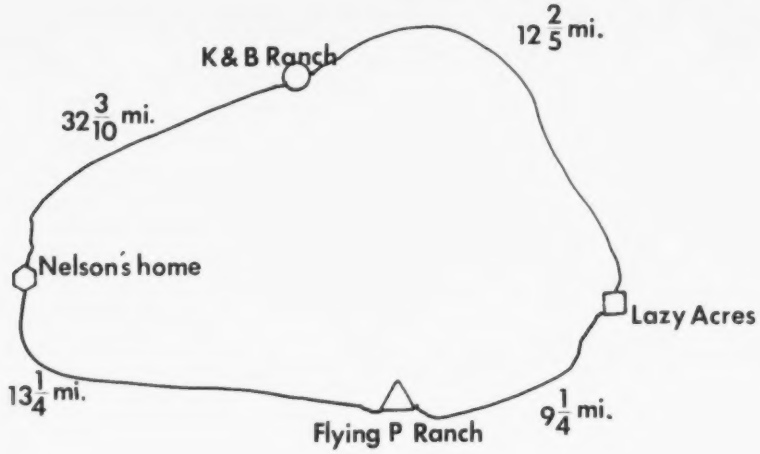
4. Solve these story problems.

a. Mr. Sullivan bought 3 1/3 pounds of corn seed, 4 2/5 pounds of cucumber seed, and 1 1/2 pounds of brocolli seed. How many pounds of seed did he buy?

b. Mrs. Hessel built three new horse stalls with widths of 12 3/4 feet, 14 1/2 feet, and 13 2/3 feet. What was the total width of the new stalls?

PRETEST

c. The Nelson family took a trip to look at three horse farms they were interested in buying. Find the length of the drive.



d. Iris bought some material to make some new clothes. She bought 4 3/4 yards of linen, 5 7/8 yards of crepe satin, and 3 2/3 yards of terry cloth. How many yards of material did she buy?

ADDING FRACTIONS
UNIT IV

ANSWERS TO PRETEST

1. a. $\frac{3}{4}$
   b. $\frac{4}{5}$
   c. $\frac{5}{7}$
   d. 2
   e. $1\frac{5}{9}$

2. a. $1\frac{1}{12}$
   b. $1\frac{19}{40}$
   c. $1\frac{29}{42}$
   d. $1\frac{8}{21}$
   e. $1\frac{8}{15}$

3. a. 5
   b. $8\frac{13}{15}$
   c. $12\frac{7}{12}$
   d. $8\frac{23}{35}$
   e. 7

4. a. $9\frac{7}{30}$
   b. $40\frac{11}{12}$
   c. $68\frac{1}{10}$
   d. $14\frac{7}{24}$

ADDING FRACTIONS
UNIT IV

INFORMATION SHEET

I. Addition of like fractions

A. Add the numerators

B. Do not add the denominators

EXAMPLE: $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

C. Reduce the answer and/or express it as a mixed number

EXAMPLE: $\frac{4}{5} + \frac{3}{5} = \frac{7}{5}$ or $1\ \frac{2}{5}$

II. Addition of unlike fractions

A. Change the fractions to like fractions

B. Add as like fractions

EXAMPLE: $\frac{1}{3} + \frac{2}{5} = \frac{5}{15} + \frac{6}{15}$

$= \frac{11}{16}$

III. Addition of mixed numbers

A. Add the whole numbers

B. Add the fractions

C. Combine these two answers

EXAMPLES: $3\ \frac{1}{7} + 7\ \frac{2}{7} = (3 + 7) + \left(\frac{1}{7} + \frac{2}{7}\right)$

$= 10 + \frac{3}{7}$

$= 10\ \frac{3}{7}$

INFORMATION SHEET

$$4\frac{2}{3} + 1\frac{5}{6} = (4 + 1) + \left(\frac{2}{3} + \frac{5}{6}\right)$$

$$= 5 + \left(\frac{4}{6} + \frac{5}{6}\right)$$

$$= 5 + \frac{9}{6}$$

$$= 5 + 1\frac{3}{6}$$

$$= 5 + 1\frac{1}{2}$$

$$= 6\frac{1}{2}$$

IV. Story problems

A. Read the problem

B. Decide on the procedures necessary to solve the problem

C. Write and solve the numerical problem

ADDING FRACTIONS
UNIT IV

ASSIGNMENT SHEET #1 — LIKE FRACTIONS

NAME _____ SCORE _____

1. Add the following like fractions. Be sure your answer is in lowest terms.

a. $\frac{2}{5} + \frac{1}{5} =$

b. $\frac{1}{3} + \frac{1}{3} =$

c. $\frac{1}{2} + \frac{1}{2} =$

d. $\frac{1}{4} + \frac{2}{4} =$

e. $\frac{3}{6} + \frac{1}{6} =$

f. $\frac{4}{10} + \frac{1}{10} =$

g. $\frac{3}{11} + \frac{2}{11} =$

h. $\frac{7}{12} + \frac{3}{12} =$

i. $\frac{3}{15} + \frac{7}{15} =$

j. $\frac{7}{12} + \frac{2}{12} =$

k. $\frac{3}{7} + \frac{1}{7} =$

l. $\frac{2}{5} + \frac{4}{5} =$

m. $\frac{5}{5} + \frac{3}{5} =$

n. $\frac{1}{5} + \frac{3}{5} =$

o. $\frac{4}{7} + \frac{1}{7} =$

p. $\frac{3}{4} + \frac{1}{4} =$

q. $\frac{7}{10} + \frac{1}{10} =$

r. $\frac{4}{11} + \frac{9}{11} =$

s. $\frac{1}{3} + \frac{2}{3} =$

n. $\frac{9}{15} + \frac{1}{15} =$

u. $\frac{5}{6} + \frac{2}{6} =$

v. $\frac{6}{12} + \frac{1}{12} =$

w. $\frac{1}{9} + \frac{8}{9} =$

x. $\frac{7}{10} + \frac{9}{10} =$

y. $\frac{1}{8} + \frac{7}{8} =$

ASSIGNMENT SHEET #1

2. Solve these story problems.

   a. At an assembly program, the Camera Club showed movies they had taken of school activities. Find the time it took to show the pictures if the film of a football practice took $\frac{2}{3}$ hour; the school picnic $\frac{1}{3}$ hour; and the pep rally $\frac{1}{3}$ hour.

   b. John rode his bicycle $\frac{2}{8}$ of a mile on Monday; $\frac{3}{8}$ mile on Tuesday; $\frac{1}{8}$ mile on Wednesday; $\frac{7}{8}$ mile on Thursday; $\frac{3}{8}$ mile on Friday. How far did he ride his bicycle?

   c. Mark spent $\frac{2}{6}$ of his earnings for food; $\frac{1}{6}$ for shelter; $\frac{1}{6}$ in savings. Did he use all of his earnings?

ASSIGNMENT SHEET #1

d. James worked $\frac{4}{9}$ of his problems; Mary worked $\frac{1}{9}$ of her problems; Sarah worked $\frac{2}{9}$ of her problems. What is the total parts of problems worked?

e. Mary bought $\frac{5}{18}$ yards of yellow material; $\frac{7}{18}$ yards of blue material; $\frac{3}{18}$ yards of green material. How many yards of material did she buy?

ADDING FRACTIONS
UNIT IV

ASSIGNMENT SHEET #2 — UNLIKE FRACTIONS

NAME _____ SCORE _____

1. Add the following unlike fractions. Reduce your answers.

a. $\begin{array}{r} \frac{2}{5} \\ +\ \frac{1}{10} \\ \hline \end{array}$

b. $\begin{array}{r} \frac{1}{2} \\ +\ \frac{4}{12} \\ \hline \end{array}$

c. $\begin{array}{r} \frac{3}{7} \\ +\ \frac{2}{14} \\ \hline \end{array}$

d. $\begin{array}{r} \frac{1}{7} \\ +\ \frac{2}{8} \\ \hline \end{array}$

e. $\begin{array}{r} \frac{3}{6} \\ +\ \frac{2}{3} \\ \hline \end{array}$

f. $\begin{array}{r} \frac{4}{10} \\ +\ \frac{3}{15} \\ \hline \end{array}$

g. $\begin{array}{r} \frac{4}{5} \\ +\ \frac{3}{4} \\ \hline \end{array}$

h. $\begin{array}{r} \frac{5}{8} \\ +\ \frac{3}{16} \\ \hline \end{array}$

i. $\begin{array}{r} \frac{4}{5} \\ +\ \frac{1}{6} \\ \hline \end{array}$

j. $\begin{array}{r} \frac{2}{7} \\ +\ \frac{1}{4} \\ \hline \end{array}$

k. $\begin{array}{r} \frac{5}{7} \\ +\ \frac{2}{3} \\ \hline \end{array}$

l. $\begin{array}{r} \frac{1}{9} \\ +\ \frac{1}{2} \\ \hline \end{array}$

ASSIGNMENT SHEET #2

m. $\begin{array}{r} \frac{4}{8} \\ +\ \frac{3}{24} \\ \hline \end{array}$

n. $\begin{array}{r} \frac{1}{2} \\ +\ \frac{1}{3} \\ \hline \end{array}$

o. $\begin{array}{r} \frac{2}{3} \\ +\ \frac{1}{2} \\ \hline \end{array}$

p. $\begin{array}{r} \frac{7}{11} \\ +\ \frac{3}{33} \\ \hline \end{array}$

q. $\begin{array}{r} \frac{1}{5} \\ +\ \frac{4}{8} \\ \hline \end{array}$

r. $\begin{array}{r} \frac{3}{5} \\ +\ \frac{4}{7} \\ \hline \end{array}$

s. $\begin{array}{r} \frac{1}{6} \\ +\ \frac{2}{4} \\ \hline \end{array}$

t. $\begin{array}{r} \frac{1}{6} \\ +\ \frac{3}{9} \\ \hline \end{array}$

u. $\begin{array}{r} \frac{4}{6} \\ +\ \frac{3}{7} \\ \hline \end{array}$

v. $\begin{array}{r} \frac{1}{2} \\ +\ \frac{4}{8} \\ \hline \end{array}$

w. $\begin{array}{r} \frac{1}{3} \\ +\ \frac{4}{10} \\ \hline \end{array}$

x. $\begin{array}{r} \frac{7}{9} \\ +\ \frac{5}{6} \\ \hline \end{array}$

y. $\begin{array}{r} \frac{3}{5} \\ +\ \frac{1}{3} \\ \hline \end{array}$

z. $\begin{array}{r} \frac{7}{8} \\ +\ \frac{6}{7} \\ \hline \end{array}$

aa. $\begin{array}{r} \frac{5}{6} \\ +\ \frac{1}{4} \\ \hline \end{array}$

ASSIGNMENT SHEET #2

bb. $\begin{array}{r} 2/4 \\ +\ 3/8 \\ \hline \end{array}$

cc. $\begin{array}{r} 4/5 \\ +\ 7/10 \\ \hline \end{array}$

dd. $\begin{array}{r} 1/8 \\ +\ 1/2 \\ \hline \end{array}$

2. Solve these story problems.

   a. Mary was combining two cookie recipes. One recipe called for 1/3 cup of milk; the other for 1/4 cup of milk. How much milk did she need?

   b. Chuck was making a cabinet that used wooden dowels to join the sides to the front and back. If the dowels were to be inserted in holes which were 1/2″ deep in the sides and 3/8″ deep in the front and back, how long was each dowel?

   c. The Stockton family spent 1/4 of its income on rent, 1/5 on food and 1/10 on clothing. What fractional part of their total income was spent on these items?

ASSIGNMENT SHEET #2

d. Mr. Kramer planted $\frac{1}{7}$ of his farm in oats, $\frac{1}{5}$ in corn, and $\frac{1}{3}$ in wheat. What fraction of his farm was planted in these crops?

e. The five cheerleaders bought ribbons of the following lengths; $\frac{2}{3}$ yards, $\frac{3}{4}$ yards, $\frac{5}{6}$ yards, $\frac{5}{9}$ yards, $\frac{1}{2}$ yards. How many yards of ribbon did they buy?

ADDING FRACTIONS
UNIT IV

ASSIGNMENT SHEET #3 — MIXED FRACTIONS

NAME _____ SCORE _____

1. Add the following fractions. Reduce your answers.

a. $\frac{1}{2} + \frac{1}{2}$

b. $\frac{2}{3} + \frac{1}{9}$

c. $\frac{4}{16} + \frac{3}{8}$

d. $\frac{1}{7} + \frac{9}{7}$

e. $\frac{2}{3} + \frac{4}{5}$

2. Add the following mixed numbers. Reduce your answers.

a. $2\frac{1}{7} + 3\frac{2}{8}$

b. $4\frac{1}{8} + 2\frac{1}{4}$

c. $6\frac{7}{8} + 1\frac{1}{8}$

d. $3\frac{3}{4} + \frac{3}{2}$

e. $12\frac{3}{16} + 4\frac{1}{4}$

f. $5\frac{1}{2} + 6\frac{2}{3}$

g. $1\frac{3}{20} + 2\frac{3}{4}$

h. $2\frac{1}{2} + 4\frac{1}{7}$

i. $6\frac{2}{3} + 3\frac{1}{6}$

ASSIGNMENT SHEET #3

j. $6\frac{5}{6} + 5\frac{1}{4}$

k. $1\frac{3}{4} + 2\frac{3}{8}$

l. $3\frac{1}{2} + 2\frac{1}{8}$

m. $10\frac{2}{5} + 12\frac{3}{10} + 2\frac{3}{5}$

n. $17\frac{1}{2} + 10\frac{3}{5} + 2\frac{3}{5}$

o. $6\frac{5}{6} + 1\frac{1}{2} + 5\frac{1}{4} + 8\frac{5}{6}$

p. $2\frac{2}{3} + 7\frac{7}{9}$

q. $3\frac{7}{8} + 4\frac{2}{3}$

r. $7\frac{4}{6} + 3\frac{1}{12}$

s. $8\frac{7}{12} + 9\frac{1}{8}$

t. $4\frac{5}{7} + 3\frac{1}{5}$

u. $8\frac{4}{7} + 6\frac{1}{4}$

ASSIGNMENT SHEET #3

v. $9\frac{2}{3} + 5\frac{1}{5}$

w. $8\frac{7}{11} + 9\frac{1}{10}$

x. $20\frac{1}{3} + 1\frac{1}{11}$

y. $8\frac{1}{9} + 1\frac{1}{4}$

ADDING FRACTIONS
UNIT IV

ASSIGNMENT SHEET #4 — MORE MIXED FRACTIONS

NAME _____ SCORE _____

1. Add and reduce your answers.

a. $2\frac{2}{8} + \frac{7}{8} + 1\frac{3}{4}$

b. $9\frac{2}{7} + 1\frac{5}{7}$

c. $7\frac{2}{3} + 2\frac{1}{3} + 8\frac{1}{4}$

d. $8\frac{2}{3} + 7\frac{1}{6}$

e. $\frac{7}{8} + 5\frac{3}{8} + 5\frac{1}{4}$

f. $5\frac{1}{5} + 6\frac{1}{2}$

g. $7\frac{1}{3} + 2\frac{2}{3} + 7\frac{7}{9}$

h. $5\frac{1}{8} + 8\frac{3}{4} + 6\frac{3}{8}$

i. $7\frac{1}{9} + 5\frac{1}{2} + 2\frac{1}{3}$

ASSIGNMENT SHEET #4

j. $4\frac{1}{2}$
$8\frac{3}{4}$
$+ 3\frac{1}{4}$

2. Solve these story problems.

a. Jim caught 4 1/2 pounds of fish, Bill caught 6 1/3 pounds, and James caught 1 1/4 pounds. How many pounds of fish did they catch all together?

b. Jim has 3 boards, 8 1/2 feet long, 6 1/2 feet long, and 4 4/16 feet long. What is the total length of board that Jim has?

c. Five scouts weigh 72 1/4 pounds, 77 1/2 pounds, 68 2/3 pounds, 82 1/2 pounds, and 79 3/4 pounds. What is their total combined weight?

ASSIGNMENT SHEET #4

d. Mr. Wayne, a mechanic, was figuring the labor charge for repair work on a car. He had worked on the car for $2\frac{1}{2}$ hours on Monday, $3\frac{1}{4}$ hours on Tuesday, $5\frac{1}{5}$ hours on Wednesday, and $3\frac{2}{3}$ hours on Thursday. How many hours did he work altogether?

e. Larry Larson worked $2\frac{2}{3}$ hours one day and $4\frac{3}{5}$ hours the next. How many hours did he work altogether?

f. The distance from Scott City to Mayville is $2\frac{7}{8}$ miles. Locust Lake is $3\frac{3}{4}$ miles beyond Mayville. How far is it to Locust Lake from Scott City through Mayville?

g. If one rainfall of $2\frac{3}{10}$ inches and another of $1\frac{7}{8}$ inches are recorded, what is the total rainfall?

ADDING FRACTIONS
UNIT IV

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. 3/5
   b. 2/3
   c. 1
   d. 3/4
   e. 2/3
   f. 1/2
   g. 5/11
   h. 5/6
   i. 2/3
   j. 3/4
   k. 4/7
   l. 6/5 or 1 1/5
   m. 8/5 or 1 3/5
   n. 4/5
   o. 5/7
   p. 1
   q. 4/5
   r. 13/11 or 1 2/11
   s. 1
   t. 2/3
   u. 7/6 or 1 1/16
   v. 7/12
   w. 1
   x. 8/5 or 1 3/5
   y. 1

2. a. 1 1/3 hours
   b. 2 miles
   c. no
   d. 7/9 problems
   e. 5/6 yard

Assignment Sheet #2

1. a. 1/2
   b. 2/3
   c. 4/7
   d. 11/28
   e. 7/6 or 1 1/6
   f. 3/5
   g. 31/20 or 1 11/20
   h. 13/16
   i. 29/30
   j. 15/28
   k. 1 8/21
   l. 19/27
   m. 5/8
   n. 5/6
   o. 7/6 or 1 1/6
   p. 8/11
   q. 7/10
   r. 41/35 or 1 6/35
   s. 2/3
   t. 1/2
   u. 23/21 or 1 2/21
   v. 1
   w. 11/15
   x. 1 11/18
   y. 14/15
   z. 1 41/56
   aa. 13/12 or 1 1/12
   bb. 7/8
   cc. 3/2 or 1 1/2
   dd. 5/8

2 a. 7/12 cup
   b. 7/8 inch
   c. 11/20 income
   d. 71/105 farm
   e. 3 11/36 yards

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #3

1. a. 1
   b. $\frac{7}{9}$
   c. $\frac{5}{8}$
   d. $\frac{10}{7}$ or $1\frac{3}{7}$
   e. $1\frac{7}{15}$

2. a. $5\frac{11}{28}$
   b. $6\frac{3}{8}$
   c. 8
   d. $5\frac{1}{4}$
   e. $16\frac{7}{16}$
   f. $12\frac{1}{8}$
   g. $3\frac{9}{10}$
   h. $6\frac{9}{14}$
   i. $9\frac{5}{6}$
   j. $12\frac{1}{12}$
   k. $4\frac{1}{8}$
   l. $5\frac{5}{8}$
   m. $25\frac{3}{10}$
   n. $30\frac{7}{10}$
   o. $22\frac{5}{12}$
   p. $10\frac{4}{9}$
   q. $8\frac{13}{24}$
   r. $10\frac{3}{4}$
   s. $17\frac{17}{24}$
   t. $7\frac{32}{35}$
   u. $14\frac{23}{28}$
   v. $14\frac{13}{15}$
   w. $17\frac{81}{110}$
   x. $21\frac{14}{33}$
   y. $9\frac{13}{36}$

Assignment Sheet #4

1. a. $4\frac{7}{8}$
   b. 11
   c. $18\frac{1}{4}$
   d. $15\frac{5}{6}$
   e. $11\frac{1}{2}$
   f. $11\frac{7}{10}$
   g. $17\frac{7}{9}$
   h. $20\frac{1}{4}$
   i. $14\frac{17}{18}$
   j. $16\frac{1}{2}$

2. a. $12\frac{1}{12}$ pounds
   b. $19\frac{1}{4}$ feet
   c. $380\frac{2}{3}$ pounds
   d. $14\frac{37}{60}$ hours
   e. $7\frac{4}{15}$ hours
   f. $6\frac{5}{8}$ miles
   g. $4\frac{7}{40}$ inches

ADDING FRACTIONS
UNIT IV

TEST

NAME _____ SCORE _____

1. Add and reduce to lowest terms.

a. $\begin{array}{r} \frac{1}{2} \\ +\ \frac{1}{2} \\ \hline \end{array}$

b. $\begin{array}{r} \frac{2}{3} \\ +\ \frac{1}{3} \\ \hline \end{array}$

c. $\begin{array}{r} \frac{4}{5} \\ +\ \frac{4}{5} \\ \hline \end{array}$

d. $\begin{array}{r} \frac{6}{7} \\ +\ \frac{4}{7} \\ \hline \end{array}$

e. $\begin{array}{r} \frac{10}{11} \\ +\ \frac{7}{11} \\ \hline \end{array}$

2. Add and reduce to lowest terms.

a. $\begin{array}{r} \frac{3}{4} \\ +\ \frac{7}{8} \\ \hline \end{array}$

b. $\begin{array}{r} \frac{5}{6} \\ +\ \frac{2}{3} \\ \hline \end{array}$

c. $\begin{array}{r} \frac{6}{11} \\ +\ \frac{14}{22} \\ \hline \end{array}$

d. $\begin{array}{r} \frac{3}{5} \\ +\ \frac{4}{7} \\ \hline \end{array}$

e. $\begin{array}{r} \frac{4}{5} \\ +\ \frac{3}{4} \\ \hline \end{array}$

TEST

3. Add and reduce to lowest terms.

a. $\begin{array}{r} \frac{3}{4} \\ +\ 1\ \frac{4}{6} \\ \hline \end{array}$

b. $\begin{array}{r} 3\ \frac{1}{3} \\ +\ 9\ \frac{3}{8} \\ \hline \end{array}$

c. $\begin{array}{r} 7\ \frac{2}{5} \\ +\ 4\ \frac{1}{3} \\ \hline \end{array}$

d. $\begin{array}{r} 8\ \frac{6}{7} \\ +\ 8\ \frac{5}{8} \\ \hline \end{array}$

e. $\begin{array}{r} 6\ \frac{7}{8} \\ +\ 3\ \frac{13}{16} \\ \hline \end{array}$

f. $\begin{array}{r} 5\ \frac{3}{5} \\ +\ 7\ \frac{4}{8} \\ \hline \end{array}$

g. $\begin{array}{r} 4\ \frac{4}{7} \\ +\ 2\ \frac{16}{21} \\ \hline \end{array}$

h. $\begin{array}{r} 2\ \frac{6}{16} \\ +\ 6\ \frac{7}{8} \\ \hline \end{array}$

i. $\begin{array}{r} 9\ \frac{6}{8} \\ +\ 1\ \frac{4}{16} \\ \hline \end{array}$

j. $\begin{array}{r} 10\ \frac{1}{16} \\ +\ 5\ \frac{2}{8} \\ \hline \end{array}$

k. $\begin{array}{r} 1\ \frac{5}{16} \\ +\ 9\ \frac{1}{8} \\ \hline \end{array}$

l. $\begin{array}{r} 8\ \frac{8}{16} \\ +\ 3\ \frac{4}{6} \\ \hline \end{array}$

m. $\begin{array}{r} 7\ \frac{2}{8} \\ +\ 8\ \frac{6}{8} \\ \hline \end{array}$

n. $\begin{array}{r} 5\ \frac{4}{8} \\ +\ 2\ \frac{1}{16} \\ \hline \end{array}$

o. $\begin{array}{r} 9\ \frac{3}{4} \\ +\ 7\ \frac{3}{16} \\ \hline \end{array}$

TEST

4. Solve these story problems.

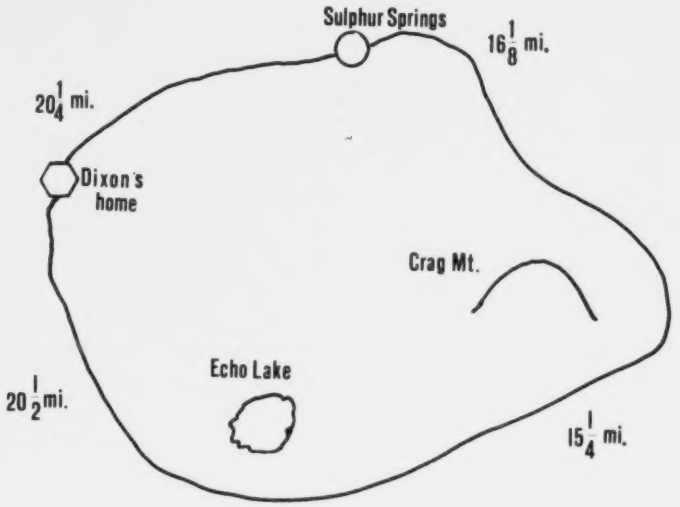
   a. Mrs. Johnson bought a 3 1/2 pound roast, a 2 1/4 pound chicken, and 5 3/4 pound ham. How many pounds of meat did she purchase?

   b. Mr. Bowen bought 3 adjoining lots measuring 50 9/10 feet, 72 1/2 feet, and 65 2/10 feet in width. What was the total width?

   c. Mr. Peake weighed the stock of nails in his store. He found these amounts in different bins: 23 1/2 pounds, 14 7/8 pounds, 43 1/4 pounds, 5 1/2 pounds, 14 1/4 pounds, 7 3/4 pounds. Find the total weight.

TEST

d. The Dixon family took a weekend drive as shown in the drawing. Find the length of the drive.



e. In his metal class Reggie used 4 pieces of copper rod with these lengths: 27 1/2 inches, 24 1/2 inches, 22 1/4 inches, and 24 1/4 inches. Find the total length of the rods.

f. Ralph sold 4 boxes of applies. The weights of the boxes and apples were: 42 1/2 pounds, 43 1/4 pounds, 40 3/8 pounds, and 30 1/4 pounds. Find the total weight.

TEST

g. Susie bought some material: 7 1/9 yards of print, 5 1/2 yards of muslin, 2 1/3 yards of double knit. How many yards did she buy?

h. The Dramatics Club practiced three evenings after school. If they practiced 1 3/4 hours, 2 1/6 hours, and 1 2/3 hours, how many hours did they practice after school?

i. The Science Club had a candy sale at school. Mary made 3 3/4 pounds of fudge; Irene, 2 7/8 pounds of peanut brittle; Kay, 1 1/2 pounds of caramels; and Dorothy, 4 3/8 pounds of divinity. How many pounds of candy did these four girls make for the sale?

j. Roy works in the school cafeteria after school. On Monday he worked 2 5/6 hours; Tuesday, 2 1/2 hours; Wednesday, 1 11/16 hours; Thursday, 1 1/3 hours; and Friday, 1 hour. How many hours did he work in the five days?

ADDING FRACTIONS
UNIT IV

ANSWERS TO TEST

1. a. 1
   b. 1
   c. $\frac{8}{5}$ or $1\ \frac{3}{5}$
   d. $\frac{9}{7}$ or $1\ \frac{2}{7}$
   e. $\frac{17}{11}$ or $1\ \frac{6}{11}$

2. a. $\frac{13}{8}$ or $1\ \frac{5}{8}$
   b. $\frac{3}{2}$ or $1\ \frac{1}{2}$
   c. $1\ \frac{2}{11}$
   d. $\frac{41}{35}$ or $1\ \frac{6}{35}$
   e. $\frac{31}{20}$ or $1\ \frac{11}{20}$

3. a. $2\ \frac{5}{12}$
   b. $12\ \frac{17}{24}$
   c. $11\ \frac{11}{15}$
   d. $17\ \frac{21}{56}$
   e. $10\ \frac{11}{16}$
   f. $13\ \frac{1}{10}$
   g. $7\ \frac{1}{3}$
   h. $9\ \frac{1}{4}$
   i. 11
   j. $15\ \frac{5}{16}$
   k. $10\ \frac{7}{16}$
   l. $12\ \frac{1}{6}$
   m. 16
   n. $7\ \frac{9}{16}$
   o. $16\ \frac{15}{16}$

4. a. $11\ \frac{1}{2}$ pounds
   b. $188\ \frac{3}{5}$ feet
   c. $109\ \frac{1}{8}$ pounds
   d. $72\ \frac{1}{8}$ miles
   e. $98\ \frac{1}{2}$ inches
   f. $156\ \frac{3}{8}$ pounds
   g. $14\ \frac{17}{18}$ yards
   h. $5\ \frac{7}{12}$ hours
   i. $12\ \frac{1}{2}$ pounds
   j. $9\ \frac{7}{48}$ hours

SUBTRACTING FRACTIONS
UNIT V

UNIT OBJECTIVE

After completing this unit, the student should be able to subtract fractions and mixed numbers with all answers expressed in lowest terms. This ability will be evidenced by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Subtract and reduce five problems with like fractions.
2. Subtract and reduce five problems involving unlike fractions.
3. Subtract and reduce twenty problems with mixed numbers.
4. Solve six story problems involving subtraction of mixed numbers.

SUBTRACTING FRACTIONS
UNIT V

SUGGESTED ACTIVITIES

I. Unit contents

A. Objective sheet

B. Suggested activities

C. Pretest

D. Answers to pretest

E. Information sheets

F. Assignment sheets

1. Assignment Sheet #1 — Subtracting Like Fractions
2. Assignment Sheet #2 — Subtracting Unlike Fractions
3. Assignment Sheet #3 — Review
4. Assignment Sheet #4 — Story Problems

G. Answers to assignment sheets

H. Test

I. Answers to test

II. Instructor's guide

A. Order (or obtain) materials to supplement unit

B. Give pretest

C. Critique pretest and go over results in class

(NOTE: Be sure to take up pretests after discussing them in class. Students who score 85 percent or higher on the pretest do not need to study this unit.)

D. Provide students with copies of unit

E. Discuss unit and specific objectives

- Explain that students will be able to subtract fractions and mixed numbers after studying this unit.

SUGGESTED ACTIVITIES

- Give the students examples of how they might have to use subtracting fractions in everyday situations.

F. Discuss information and assignment sheets

1. Explain how to subtract like fractions and reduce to lowest terms using Information Sheet, Section I.

   - Put some examples on the chalkboard, and work through the problems; have the students take notes.
   - Put some problems on the chalkboard for the students to work in their notes.
   - Have students go to the chalkboard and show how they worked through the problems.
   - Have students complete Assignment Sheet #1.
   - Go over the answers in class.

2. Discuss how to subtract unlike fractions and reduce to lowest terms using Information Sheet, Section II.

   - Put several examples on the chalkboard, and work through the problems; have the students take notes.
   - Put some problems on the chalkboard for the students to work in their notes.
   - Have students go to the chalkboard and show how they worked through the problems.
   - Have students complete Assignment Sheet #2.
   - Go over the answers in class.

3. Explain how to subtract mixed numbers and reduce to lowest terms using Information Sheet, Section III.

   - Put several examples on the chalkboard, and work through the problems; have the students take notes.
   - Put some problems on the chalkboard for the students to work in their notes.
   - Have students go to the chalkboard and show how they worked through the problems.

SUGGESTED ACTIVITIES

- Have students complete Assignment Sheet #3.
- Go over the answers in class.

4. Discuss how to solve story problems that involve subtracting fractions and mixed numbers.
   - Work through several story problems on the chalkboard to show students the proper procedure for solving story problems.
   - Write several story problems on the chalkboard for the students to practice.
   - Discuss the answers in class.
   - Have students complete Assignment Sheet #4.
   - Discuss answers in class.

G. Give test

H. Critique test and discuss in class

I. Reteach and retest as necessary

III. Unit references

Spann, Margaret. *Related Vocational Math*. Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

SUBTRACTING FRACTIONS
UNIT V

PRETEST

NAME _____ SCORE _____

1. Subtracting these like fractions. Reduce to lowest terms.

a. $\begin{array}{r} \frac{15}{17} \\ -\frac{10}{17} \\ \hline \end{array}$

b. $\begin{array}{r} \frac{3}{4} \\ -\frac{2}{4} \\ \hline \end{array}$

c. $\begin{array}{r} \frac{13}{16} \\ -\frac{1}{16} \\ \hline \end{array}$

d. $\begin{array}{r} \frac{8}{11} \\ -\frac{6}{11} \\ \hline \end{array}$

e. $\begin{array}{r} \frac{8}{9} \\ -\frac{5}{9} \\ \hline \end{array}$

2. Subtract these unlike fractions, and reduce to lowest terms.

a. $\begin{array}{r} \frac{4}{5} \\ -\frac{1}{3} \\ \hline \end{array}$

b. $\begin{array}{r} \frac{3}{4} \\ -\frac{1}{2} \\ \hline \end{array}$

c. $\begin{array}{r} \frac{11}{16} \\ -\frac{2}{8} \\ \hline \end{array}$

d. $\begin{array}{r} \frac{8}{12} \\ -\frac{1}{3} \\ \hline \end{array}$

e. $\begin{array}{r} \frac{7}{16} \\ -\frac{1}{4} \\ \hline \end{array}$

PRETEST

3. Subtract these mixed fractions, and reduce to lowest terms.

a. $6\frac{2}{3} - 4\frac{1}{6}$

b. $7\frac{7}{12} - 5\frac{2}{4}$

c. $12\frac{12}{15} - 6\frac{3}{5}$

d. $6\frac{3}{8} - 3\frac{2}{16}$

e. $4\frac{1}{2} - 2\frac{1}{3}$

4. Solve these story problems. Reduce answers to lowest terms.

   a. What is the different in size between an 18 1/2 foot speedboat and a 16 1/4 foot fishing boat?

   b. Don is 69 1/2 inches tall. Barry is 72 1/4 inches tall. How many inches taller is Barry than Don?

PRETEST

c. One of Terrell's suitcases weighs 53 1/3 pounds and the second 35 3/4 pounds. What is the difference in their weights?

SUBTRACTING FRACTIONS
UNIT V

ANSWERS TO PRETEST

1. a. $5/7$
   b. $1/4$
   c. $3/4$
   d. $2/11$
   e. $1/3$

2. a. $7/15$
   b. $1/4$
   c. $7/16$
   d. $1/3$
   e. $3/16$

3. a. $2\ 1/3$
   b. $2\ 1/12$
   c. $6\ 1/5$
   d. $3\ 1/4$
   e. $2\ 1/6$

4. a. $2\ 1/4$ feet
   b. $2\ 3/4$ inches
   c. $17\ 7/12$ pounds

SUBTRACTING FRACTIONS
UNIT V

INFORMATION SHEET

I. Subtracting like fractions

A. Subtract the numerators

B. Write the common denominator

C. Reduce the answer, if possible

EXAMPLE:
$$\begin{array}{r} \frac{7}{11} \\ -\frac{1}{11} \\ \hline \frac{6}{11} \end{array}$$

II. Subtracting unlike fractions

A. Rename the fractions so that they are like fractions

B. Subtract the numerators

C. Write the common denominator

D. Reduce the answer, if possible

EXAMPLE: $\frac{2}{3} - \frac{1}{2}$
$$\begin{array}{r} \frac{2}{3} = \frac{4}{6} \\ \frac{1}{2} = \frac{3}{6} \\ \hline \frac{1}{6} \end{array}$$

III. Subtracting mixed numbers

A. Borrowing not necessary

1. Rename the fractions, if necessary

2. Subtract the fractions

INFORMATION SHEET

3. Subtract the whole numbers

4. Reduce the answer, if possible

EXAMPLE:
$$4\frac{5}{8} = 4\frac{5}{8}$$
$$1\frac{1}{2} = 1\frac{4}{8}$$
$$3\frac{1}{8}$$

B. Borrowing necessary

1. Rename the fractions, if necessary

2. Borrow one from the whole number in the minuend and change it to a like fraction

3. Add this fraction to the fraction in the minuend

4. Subtract

5. Reduce the answer, if possible

EXAMPLE:
$$12\frac{1}{3} = 12\frac{4}{12} = 11\frac{16}{12}$$
$$8\frac{3}{4} = 8\frac{9}{12} = 8\frac{9}{12}$$
$$3\frac{7}{12}$$

IV. Story problems

A. Read the problem

B. Decide on the procedures necessary to solve the problem

C. Write and solve the numerical problem

SUBTRACTING FRACTIONS
UNIT V

ASSIGNMENT SHEET #1 — SUBTRACTING LIKE FRACTIONS

NAME _____ SCORE _____

1. Subtract and reduce the answers.

a. $\frac{7}{8} - \frac{2}{8} =$

b. $\frac{3}{4} - \frac{1}{4} =$

c. $\frac{2}{3} - \frac{1}{3} =$

d. $\frac{7}{16} - \frac{1}{16} =$

e. $\frac{7}{8} - \frac{6}{8} =$

f. $\frac{7}{12} - \frac{1}{12} =$

g. $\frac{14}{32} - \frac{7}{32} =$

h. $\frac{5}{6} - \frac{1}{6} =$

i. $\frac{3}{4} - \frac{2}{4} =$

j. $\frac{5}{8} - \frac{3}{8} =$

k. $\frac{13}{16} - \frac{3}{16} =$

l. $\frac{8}{8} - \frac{1}{8} =$

m. $\frac{5}{7} - \frac{2}{7} =$

n. $\frac{11}{16} - \frac{9}{16} =$

o. $\frac{2}{8} - \frac{1}{8} =$

ASSIGNMENT SHEET #1

p. $\begin{array}{r} \frac{8}{9} \\ -\frac{2}{9} \\ \hline \end{array}$

q. $\begin{array}{r} \frac{7}{8} \\ -\frac{7}{8} \\ \hline \end{array}$

r. $\begin{array}{r} \frac{10}{12} \\ -\frac{8}{12} \\ \hline \end{array}$

s. $\begin{array}{r} \frac{9}{16} \\ -\frac{3}{16} \\ \hline \end{array}$

t. $\begin{array}{r} \frac{7}{11} \\ -\frac{3}{11} \\ \hline \end{array}$

2. Solve these story problems and reduce the answers.

   a. Mike has some metal stock $^{7}/_{8}$ inch long. He wishes to remove $^{2}/_{8}$ inch, how much will be left?

   b. Find the difference between a $^{9}/_{16}$ inch wrench and a $^{3}/_{16}$ inch wrench.

ASSIGNMENT SHEET #1

c. What is the difference in width of a 5/8 inch bolt and a 1/8 inch bolt.

SUBTRACTING FRACTIONS
UNIT V

ASSIGNMENT SHEET #2 — SUBTRACTING UNLIKE FRACTIONS

NAME _____ SCORE _____

1. Subtract and reduce the answers.

a. $\frac{7}{8} - \frac{1}{4}$

b. $\frac{5}{16} - \frac{1}{4}$

c. $\frac{9}{10} - \frac{1}{5}$

d. $\frac{2}{3} - \frac{1}{2}$

e. $\frac{7}{8} - \frac{3}{4}$

f. $\frac{5}{16} - \frac{5}{16}$

g. $\frac{12}{16} - \frac{3}{8}$

h. $\frac{17}{32} - \frac{3}{8}$

i. $\frac{4}{7} - \frac{1}{3}$

j. $\frac{7}{9} - \frac{2}{3}$

k. $\frac{4}{9} - \frac{1}{3}$

l. $\frac{13}{17} - \frac{4}{28}$

m. $\frac{2}{5} - \frac{1}{10}$

n. $\frac{3}{6} - \frac{1}{12}$

o. $\frac{4}{7} - \frac{2}{14}$

ASSIGNMENT SHEET #2

2. Solve these story problems and reduce the answer.

   a. Jim caught a $\frac{3}{4}$ pound bass, Bob caught a $\frac{1}{2}$ pound perch. How much bigger was Jim's bass?

   b. The thickness of a board painted on one side is $\frac{15}{16}$ inch. The paint is $\frac{1}{32}$ inch thick. How thick is the board? (Try drawing a picture.)

SUBTRACTING FRACTIONS
UNIT V

ASSIGNMENT SHEET #3 — REVIEW

NAME _____ SCORE _____

Directions: Subtract and reduce the answers.

1. $8\frac{5}{6} - 6\frac{1}{3}$ = _____

2. $11\frac{11}{12} - 8\frac{1}{4}$ = _____

3. $14\frac{3}{4} - 3\frac{1}{8}$ = _____

4. $18\frac{9}{10} - 15\frac{2}{5}$ = _____

5. $42\frac{7}{8} - 9\frac{3}{16}$ = _____

6. $9\frac{3}{4} - 1\frac{9}{10}$ = _____

7. $7\frac{1}{6} - 5\frac{3}{8}$ = _____

8. $18\frac{5}{6} - 12\frac{15}{16}$ = _____

9. $23\frac{3}{8} - 11\frac{5}{15}$ = _____

10. $24\frac{7}{12} - 14\frac{7}{10}$ = _____

11. $6\frac{7}{8} - 2\frac{3}{8}$ = _____

12. $2\frac{1}{2} - 1\frac{3}{4}$ = _____

13. $8\frac{1}{4} - 4\frac{2}{5}$ = _____

14. $11\frac{1}{2} - 2\frac{1}{3}$ = _____

15. $14\frac{3}{8} - 9\frac{1}{10}$ = _____

ASSIGNMENT SHEET #3

16. $8\frac{3}{4} - 5\frac{1}{6}$

17. $3\frac{7}{12} - 1\frac{3}{8}$

18. $7\frac{15}{16} - 2\frac{5}{6}$

19. $13\frac{9}{10} - 9\frac{3}{4}$

20. $32\frac{13}{20} - 27\frac{5}{8}$

21. $10\frac{1}{3} - 4\frac{1}{2}$

22. $13\frac{1}{4} - 8\frac{2}{3}$

23. $9\frac{1}{6} - 2\frac{3}{5}$

24. $36\frac{2}{3} - 17\frac{7}{8}$

25. $25\frac{3}{4} - 21\frac{4}{5}$

26. $24\frac{9}{16} - 8\frac{3}{4}$

27. $21\frac{3}{10} - 13\frac{1}{4}$

28. $10\frac{5}{6} - 10\frac{7}{12}$

29. $8\frac{7}{8} - 7\frac{15}{16}$

30. $4\frac{1}{6} - 3\frac{2}{3}$

SUBTRACTING FRACTIONS
UNIT V

ASSIGNMENT SHEET #4 — STORY PROBLEMS

NAME _____ SCORE _____

Directions: Solve the following story problems by writing them as numerical problems first. Reduce the answers.

1. 17 1/2 ricks of wood minus 6 1/8 ricks of wood equals _____.

2. Find the difference between 12 1/2 feet and 3 7/8 feet.

3. The boys of the CVET class sold 89 1/2 pounds of tin, while the girls sold 73 1/2 pounds. How many more pounds of tin did the boys sell than the girls?

4. How many more pages must Amanda read in social studies before the end of the semester? Amanda has 247 1/2 pages to read. She has already read 129 1/4 pages.

ASSIGNMENT SHEET #4

5. How many more hours did Sue work on a project during the fall semester? Sue worked 64 3/4 hours during the fall semester on her project, and she worked 24 1/8 hours during the spring semester on the project.

6. How many pounds did Bill have left? Bill gave 12 1/5 of his 39 pounds to Jim.

7. How much longer did it take Sally to read the chapter? Sally read her chapter in 3/4 hour. Susan read her chapter in 4/10 hour.

8. Julie took two trips during the summer vacation. On one trip she traveled 567 7/12 miles, and on the other trip she traveled 675 3/8 miles. What is the difference in the number of miles in the two trips?

ASSIGNMENT SHEET #4

9. How many more pounds of fish did the boys catch than the girls? The boys caught 16 1/2 pounds while the girls caught 9 1/5 pounds.

10. Jim had a board 78 5/16 inches long. He sawed off 3 1/8 inches. How long is the board now?

11. Two months ago Marvin weighed 223 1/4 pounds. Now he weighs 216 3/4 pounds. How many pounds did he lose?

12. If normal body temperature is 98 3/5°, how many degrees above normal is a temperature of 101°?

ASSIGNMENT SHEET #4

13. A 2 1/2 inch nail is driven through a piece of wood 1 1/8 inches thick which supports a joist. How far into the joist did the nail extend?

14. One train takes 15 3/4 hours from Tulsa to Omaha. Another train takes 17 1/2 hours for the same trip. How much faster is the first train?

15. A 4 1/4 pound chicken weighed 3 1/8 pounds when dressed. Find the loss in weight.

SUBTRACTING FRACTIONS
UNIT V

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. $\frac{5}{8}$
   b. $\frac{1}{2}$
   c. $\frac{1}{3}$
   d. $\frac{3}{8}$
   e. $\frac{1}{8}$
   f. $\frac{1}{2}$
   g. $\frac{7}{32}$
   h. $\frac{2}{3}$
   i. $\frac{1}{4}$
   j. $\frac{1}{4}$
   k. $\frac{5}{8}$
   l. $\frac{7}{8}$
   m. $\frac{3}{7}$
   n. $\frac{1}{8}$
   o. $\frac{1}{8}$
   p. $\frac{2}{3}$
   q. 0
   r. $\frac{1}{6}$
   s. $\frac{3}{8}$
   t. $\frac{4}{11}$

2. a. $\frac{5}{8}$ inch
   b. $\frac{3}{8}$ inch
   c. $\frac{1}{2}$ inch

Assignment Sheet #2

1. a. $\frac{5}{8}$
   b. $\frac{1}{16}$
   c. $\frac{7}{10}$
   d. $\frac{1}{6}$
   e. $\frac{1}{8}$
   f. $\frac{1}{4}$
   g. $\frac{3}{8}$
   h. $\frac{5}{32}$
   i. $\frac{5}{21}$
   j. $\frac{1}{9}$
   k. $\frac{1}{9}$
   l. $\frac{11}{17}$
   m. $\frac{3}{10}$
   n. $\frac{5}{12}$
   o. $\frac{3}{7}$

2. a. $\frac{1}{4}$ pound
   b. $\frac{29}{32}$ inch

Assignment Sheet #3

1. $2\frac{1}{2}$
2. $3\frac{2}{3}$
3. $11\frac{5}{8}$
4. $3\frac{1}{2}$
5. $33\frac{11}{16}$
6. $7\frac{17}{20}$
7. $1\frac{19}{24}$
8. $5\frac{43}{48}$
9. $11\frac{23}{24}$
10. $9\frac{53}{60}$
11. $4\frac{1}{2}$
12. $\frac{3}{4}$
13. $3\frac{17}{20}$
14. $9\frac{1}{6}$
15. $5\frac{11}{40}$
16. $3\frac{7}{12}$
17. $2\frac{5}{24}$
18. $5\frac{5}{48}$
19. $4\frac{3}{20}$
20. $5\frac{1}{40}$
21. $5\frac{5}{6}$
22. $4\frac{7}{12}$
23. $6\frac{17}{30}$
24. $18\frac{19}{24}$
25. $3\frac{19}{20}$
26. $15\frac{13}{16}$
27. $8\frac{1}{20}$
28. $\frac{1}{4}$
29. $\frac{15}{16}$
30. $\frac{1}{2}$

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #4

1. 11 3/8 ricks
2. 8 5/8 feet
3. 16 pounds
4. 118 1/4 pages
5. 40 5/8 hours
6. 26 4/5 pounds
7. 7/20 hour
8. 107 19/24 miles
9. 7 3/10 pounds
10. 75 3/16 inches
11. 6 1/2 pounds
12. 2 2/5°
13. 1 3/8 inches
14. 1 3/4 hours
15. 1 1/8 pounds

SUBTRACTING FRACTIONS
UNIT V

TEST

NAME _____ SCORE _____

1. Subtract these like fractions and reduce to lowest terms.

a. $\begin{array}{r} \frac{22}{24} \\ -\frac{9}{24} \\ \hline \end{array}$

b. $\begin{array}{r} \frac{2}{3} \\ -\frac{1}{3} \\ \hline \end{array}$

c. $\begin{array}{r} \frac{7}{8} \\ -\frac{1}{8} \\ \hline \end{array}$

d. $\begin{array}{r} \frac{7}{11} \\ -\frac{2}{11} \\ \hline \end{array}$

e. $\begin{array}{r} \frac{14}{16} \\ -\frac{1}{16} \\ \hline \end{array}$

2. Subtract these unlike fractions and reduce to lowest terms.

a. $\begin{array}{r} \frac{3}{4} \\ -\frac{1}{5} \\ \hline \end{array}$

b. $\begin{array}{r} \frac{7}{16} \\ -\frac{1}{4} \\ \hline \end{array}$

c. $\begin{array}{r} \frac{5}{8} \\ +\frac{1}{2} \\ \hline \end{array}$

d. $\begin{array}{r} \frac{9}{12} \\ -\frac{1}{3} \\ \hline \end{array}$

e. $\begin{array}{r} \frac{5}{6} \\ -\frac{1}{3} \\ \hline \end{array}$

INFORMATION SHEET

EXAMPLE 3

Regular method

$$\frac{10}{14} \times \frac{21}{25} = \frac{210}{350} = \frac{3}{5}$$

Short cut

$$\frac{\cancel{10}^{2}}{\cancel{14}_{7}} \times \frac{\cancel{21}^{3}}{\cancel{25}_{5}} = \frac{6}{10} = \frac{3}{5}$$

II. Multiply mixed numbers

A. Convert the mixed number to an improper fraction

B. Multiply as with fractions

C. Reduce the answer, if possible

EXAMPLES: $3\frac{1}{2} \times 1\frac{2}{3} = \frac{7}{2} \times \frac{5}{3}$

$$= \frac{7 \times 5}{2 \times 3}$$

$$= \frac{35}{6}$$

$$= 5\frac{5}{6}$$

$$1\frac{1}{3} \times 10 = \frac{4}{3} \times \frac{10}{1}$$

$$= \frac{4 \times 10}{3 \times 1}$$

$$= \frac{40}{3}$$

$$= 13\frac{1}{3}$$

(NOTE: A whole number is written over 1 to make it a fraction.)

III. Story problems

A. Read the problem

TEST

3. Subtract these mixed fractions and reduce to lowest terms.

a. $7\frac{1}{3} - 4\frac{1}{5}$

b. $9\frac{1}{7} - 3\frac{2}{3}$

c. $20\frac{3}{5} - 12\frac{7}{16}$

d. $10\frac{1}{8} - 6\frac{1}{4}$

e. $3\frac{5}{8} - 2\frac{5}{8}$

f. $9\frac{3}{8} - 4\frac{5}{16}$

g. $4\frac{11}{16} - 3\frac{3}{8}$

h. $7\frac{2}{3} - 1\frac{3}{4}$

i. $7\frac{5}{8} - 1\frac{1}{2}$

j. $8\frac{5}{6} - 1\frac{11}{12}$

k. $12\frac{2}{3} - 1\frac{1}{4}$

l. $1\frac{4}{5} - \frac{1}{3}$

m. $16\frac{1}{5} - 3\frac{1}{10}$

n. $8\frac{5}{7} - 1\frac{1}{5}$

o. $8\frac{7}{9} - 6\frac{1}{3}$

TEST

p. $7\frac{7}{7} - 1\frac{2}{3}$

q. $9\frac{2}{5} - 1\frac{1}{10}$

r. $9\frac{4}{5} - 7\frac{1}{3}$

s. $8\frac{1}{2} - \frac{1}{2}$

t. $8\frac{9}{16} - 1\frac{5}{8}$

4. Solve these story problems.

   a. What is the difference in size between a 40 1/2 foot sail boat and a 35 1/4 foot sail boat?

   b. A motor rated at 6 1/2 horsepower loses 2 5/8 horsepower during transmission. What is actual horsepower?

TEST

c. Bill is 62 1/4 inches tall. Jim is 57 1/2 inches tall. How many inches taller is Bill than Jim?

d. A 1 × 12 is actually 5/8" wide. A 2 × 4 is actually 1 3/4 inches wide. How much wider is the 2 × 4 than the 1 × 12?

e. A nuggett of gold weights 7 1/2 ounces. A nugget of silver weighs 3 3/4 ounces. How much heavier per nugget is gold?

f. A pecan pie uses 1 1/2 cups pecans, a fruit cake uses 3/4 cup. How many more pecans go into pecan pie?

SUBTRACTING FRACTIONS
UNIT V

ANSWERS TO TEST

1. a. $\frac{13}{24}$
   b. $\frac{1}{3}$
   c. $\frac{3}{4}$
   d. $\frac{5}{11}$
   e. $\frac{13}{16}$

2. a. $\frac{11}{20}$
   b. $\frac{3}{16}$
   c. $\frac{1}{8}$
   d. $\frac{5}{12}$
   e. $\frac{1}{2}$

3. a. $3\frac{2}{15}$
   b. $5\frac{10}{21}$
   c. $8\frac{13}{80}$
   d. $3\frac{7}{8}$
   e. 1
   f. $5\frac{1}{16}$
   g. $1\frac{5}{16}$
   h. $5\frac{11}{12}$
   i. $6\frac{1}{8}$
   j. $6\frac{11}{12}$
   k. $11\frac{5}{12}$
   l. $1\frac{7}{15}$
   m. $13\frac{1}{10}$
   n. $7\frac{18}{35}$
   o. $2\frac{4}{9}$
   p. $6\frac{1}{3}$
   q. $8\frac{3}{10}$
   r. $2\frac{7}{15}$
   s. 8
   t. $6\frac{15}{16}$

4. a. $5\frac{1}{4}$ feet
   b. $3\frac{7}{8}$ horsepower
   c. $4\frac{3}{4}$ inches
   d. $1\frac{1}{8}$ inches
   e. $3\frac{3}{4}$ ounces
   f. $\frac{3}{4}$ cup

MULTIPLYING FRACTIONS
UNIT VI

UNIT OBJECTIVE

After completing this unit, the students should be able to multiply fractions and mixed numbers. They will express all answers in lowest terms. This ability will be evidenced by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Multiply and reduce fifteen problems involving fractions.
2. Multiply and reduce ten problems with mixed numbers.
3. Solve seven written problems using multiplication of fractions.

MULTIPLYING FRACTIONS
UNIT VI

SUGGESTED ACTIVITIES

I. Unit contents

- A. Objective sheet
- B. Suggested activities
- C. Pretest
- D. Answers to pretest
- E. Information sheets
- F. Assignment sheets
  1. Assignment Sheet #1 — Multiplying Fractions
  2. Assignment Sheet #2 — Multiplying Mixed Numbers
  3. Assignment Sheet #3 — Story Problems
- G. Answers to assignment sheets
- H. Test
- I. Answers to test

II. Instructor's guide

- A. Order (or obtain) materials to supplement unit
- B. Give pretest
- C. Critique pretest and go over results in class

  (NOTE: Be sure to take up pretests after discussing them in class. Students who score 85 percent or higher on the pretest do not need to study this unit.)

- D. Provide students with copies of unit
- E. Discuss unit and specific objectives
  - Explain that students will learn to multiply fractions and mixed numbers.
  - Give students examples of situations that would require them to know how to multiply fractions and mixed numbers.

SUGGESTED ACTIVITIES

F. Discuss information and assignment sheets

1. Explain how to multiply and reduce fractions using Information Sheet, Section I.

   - Demonstrate how to multiply fractions by putting examples on the chalkboard and working through them; have students take notes.
   - Put some sample problems on the chalkboard for the students to work; after the students have completed the problems at their seats, have students put their solutions on the chalkboard for the class to critique; discuss the answers.
   - Have students complete Assignment Sheet #1.
   - Discuss answers in class.

2. Discuss how to multiply mixed fractions; use Information Sheet, Section II.

   - Demonstrate how to multiply mixed numbers by putting examples on the chalkboard and working through them; have students take notes.
   - Put some sample problems on the chalkboard for the students to work; after the students have completed the problems at their seats, have students put their solutions on the chalkboard for the class to critique; discuss the answers.
   - Have students complete Assignment Sheet #2.
   - Discuss answers in class.

3. Explain how to solve story problems that contain fractions using Information Sheet, Section III.

   - Demonstrate how to solve story problems by putting examples on the chalkboard and working through them; have students take notes.
   - Put some sample problems on the chalkboard for the students to work; after the students have completed the problems at their seats, have students put their solutions on the chalkboard for the class to critique; discuss the answers.
   - Have students complete Assignment Sheet #3.
   - Discuss answers in class.

G. Give test

SUGGESTED ACTIVITIES

H. Critique test and discuss in class

I. Reteach and retest as necessary

III. Unit references

Spann, Margaret. *Related Vocational Math*. Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

MULTIPLYING FRACTIONS
UNIT VI

PRETEST

NAME _____ SCORE _____

1. Multiply these fractions, and reduce the answers.

a. $\frac{1}{2} \times \frac{2}{5} =$

b. $\frac{4}{5} \times \frac{1}{3} =$

c. $\frac{2}{3} \times \frac{6}{7} =$

d. $\frac{7}{8} \times \frac{1}{4} =$

e. $\frac{5}{11} \times \frac{1}{4} =$

f. $\frac{2}{5} \times \frac{3}{7} =$

g. $\frac{1}{9} \times \frac{3}{7} =$

h. $\frac{3}{8} \times \frac{1}{3} =$

i. $\frac{4}{12} \times \frac{2}{3} =$

j. $\frac{6}{7} \times \frac{1}{2} =$

2. Multiply these mixed numbers, and reduce answers.

a. $2\frac{1}{8} \times 3\frac{3}{4} =$

b. $1\frac{3}{5} \times 2\frac{1}{3} =$

c. $5\frac{4}{7} \times 2\frac{2}{3} =$

d. $1\frac{1}{2} \times 5\frac{3}{7} =$

e. $3\frac{1}{3} \times 6\frac{5}{7} =$

f. $4\frac{2}{3} \times 2\frac{5}{8} =$

g. $2\frac{1}{6} \times 7\frac{1}{4} =$

h. $3\frac{2}{3} \times 6\frac{3}{8} =$

i. $5\frac{1}{6} \times 3\frac{4}{9} =$

j. $12\frac{1}{3} \times 2\frac{1}{2} =$

PRETEST

3. Solve these story problems.

   a. If one box of nails weighs 6 3/4 pounds, how much do 4 boxes weigh?

   b. If your truck uses 1 gallon of gas to travel 16 1/4 miles, how many miles can you travel on 5 3/4 gallons?

   c. If your recipe calls for 2 2/3 pounds of orange roughy for 4 people, how much orange roughy will you need for 12 people?

   d. If you use 3/4 cup of chocolate chips for one batch of cookies, how many cups will you need for 4 1/2 batches?

PRETEST

e. If a person can put up 32 1/2 feet of fence in an hour, how much fence can he or she put up in 5 3/4 hours?

MULTIPLYING FRACTIONS
UNIT VI

ANSWERS TO PRETEST

1. a. $\frac{1}{5}$
   b. $\frac{4}{15}$
   c. $\frac{4}{7}$
   d. $\frac{7}{32}$
   e. $\frac{5}{44}$
   f. $\frac{6}{35}$
   g. $\frac{1}{36}$
   h. $\frac{1}{8}$
   i. $\frac{2}{9}$
   j. $\frac{3}{7}$

2. a. $7\frac{31}{32}$
   b. $3\frac{11}{15}$
   c. $14\frac{6}{7}$
   d. $8\frac{1}{7}$
   e. 7
   f. $12\frac{1}{4}$
   g. $15\frac{17}{24}$
   h. $23\frac{3}{8}$
   i. $17\frac{43}{54}$
   j. $30\frac{5}{6}$

3. a. 27 pounds
   b. $93\frac{7}{16}$ miles
   c. 8 pounds
   d. $3\frac{3}{8}$ cups
   e. $186\frac{7}{8}$ feet

MULTIPLYING FRACTIONS
UNIT VI

INFORMATION SHEET

I. Multiply fractions

A. Multiply the numerators

B. Multiply the denominators

C. Reduce the answer, if possible

EXAMPLES: $\frac{4}{7} \times \frac{2}{3} = \frac{4 \times 2}{7 \times 3} = \frac{8}{21}$

$$\frac{5}{6} \times \frac{1}{2} = \frac{5 \times 1}{6 \times 2} = \frac{5}{12}$$

EXAMPLE 1

Regular method

$$\frac{3}{4} \times \frac{7}{12} = \frac{21}{48} = \frac{7}{16}$$

Short cut

$$\frac{\overset{1}{\cancel{3}}}{4} \times \frac{7}{\cancel{12}_{4}} = \frac{3}{4} \qquad \frac{7}{12} = \frac{7}{16}$$

(NOTE: The short cut uses cancelling. Cancelling reduces numerators and denominators that are opposite each other before you multiply. In the above example, you can reduce the 3 and 12 by dividing by 3.)

EXAMPLE 2

Regular method

$$\frac{3}{5} \times \frac{15}{21} = \frac{3}{7}$$

Short cut

$$\frac{\overset{1}{\cancel{3}}}{\cancel{15}_{5}} \times \frac{\cancel{15}^{3}}{\cancel{21}_{7}} = \frac{45}{105} = \frac{3}{7}$$

INFORMATION SHEET

B. Decide on the procedures necessary to solve the problem

C. Write and solve the numerical problem

MULTIPLYING FRACTIONS
UNIT VI

ASSIGNMENT SHEET #1 — MULTIPLYING FRACTIONS

NAME _____ SCORE _____

Directions: Multiply and reduce the answers.

1. $\frac{1}{2} \times \frac{3}{4} =$
2. $\frac{2}{3} \times \frac{4}{5} =$
3. $\frac{5}{6} \times \frac{11}{12} =$
4. $\frac{3}{4} \times \frac{2}{5} =$
5. $\frac{3}{5} \times \frac{6}{7} =$
6. $\frac{2}{3} \times \frac{2}{5} =$
7. $\frac{2}{5} \times \frac{1}{2} =$
8. $\frac{7}{8} \times \frac{5}{6} =$
9. $\frac{3}{7} \times \frac{2}{5} =$
10. $\frac{7}{9} \times \frac{4}{5} =$
11. $\frac{2}{5} \times \frac{3}{7} =$
12. $\frac{4}{5} \times \frac{7}{9} =$
13. $\frac{5}{9} \times \frac{2}{7} =$
14. $\frac{3}{16} \times \frac{9}{5} =$
15. $\frac{2}{7} \times \frac{5}{9} =$
16. $\frac{2}{3} \times \frac{5}{7} =$
17. $\frac{5}{6} \times \frac{13}{14} =$
18. $\frac{1}{5} \times \frac{6}{7} =$
19. $\frac{2}{9} \times \frac{2}{3} =$
20. $\frac{3}{8} \times \frac{11}{12} =$

ASSIGNMENT SHEET #1

21. $\frac{1}{2} \times \frac{1}{3} =$

22. $\frac{2}{5} \times \frac{2}{3} =$

23. $\frac{2}{3} \times \frac{5}{7} =$

24. $\frac{5}{8} \times \frac{7}{9} =$

25. $\frac{1}{3} \times \frac{1}{2} =$

26. $\frac{2}{8} \times \frac{2}{5} =$

27. $\frac{5}{7} \times \frac{2}{8} =$

28. $\frac{2}{3} \times \frac{5}{8} =$

29. $\frac{4}{5} \times \frac{1}{8} =$

30. $\frac{2}{3} \times \frac{7}{8} =$

MULTIPLYING FRACTIONS
UNIT VI

ASSIGNMENT SHEET #2 — MULTIPLYING MIXED NUMBERS

NAME _____ SCORE _____

Directions: Multiply and reduce the answers.

1. $\frac{5}{6} \times \frac{9}{20} =$
2. $\frac{4}{5} \times \frac{15}{16} =$
3. $\frac{3}{8} \times \frac{8}{9} =$
4. $20 \times \frac{5}{6} =$
5. $12 \times \frac{7}{8} =$
6. $4 \times \frac{5}{16} =$
7. $2\frac{1}{16} \times 1\frac{1}{3} =$
8. $3\frac{1}{2} \times 2\frac{1}{10} =$
9. $10\frac{1}{8} \times 7\frac{1}{9} =$
10. $\frac{7}{10} \times \frac{8}{21} =$
11. $\frac{2}{5} \times \frac{7}{10} =$
12. $\frac{3}{4} \times \frac{16}{27} =$
13. $6 \times \frac{7}{32} =$
14. $24 \times \frac{3}{4} =$
15. $18 \times \frac{31}{64} =$
16. $2\frac{3}{16} \times 3\frac{1}{7} =$
17. $5\frac{5}{8} \times \frac{4}{9} =$
18. $1\frac{13}{32} \times \frac{3}{10} =$
19. $\frac{24}{10} \times \frac{5}{8} =$
20. $\frac{7}{24} \times \frac{4}{7} =$

MULTIPLYING FRACTIONS
UNIT VI

ASSIGNMENT SHEET #3 — STORY PROBLEMS

NAME _____ SCORE _____

Directions: Multiply and reduce the answers.

1. Solve and reduce all answers.

   a. If one gallon of water weighs 8 1/3 pounds, how much does 7 1/2 gallons weigh?

   b. One foot of pipe weighs 1 7/8 pounds. Find the weight of 12 feet of pipe.

   c. One foot of copper rod weighs 4/9 pound. Find the weight of 27 feet of copper rod.

ASSIGNMENT SHEET #3

d. Find the weight of 6 round bars of steel each 9" long, when a bar 9" long weighs 2 $\frac{2}{3}$ pounds.

e. One gallon of water weighs 8 $\frac{1}{3}$ pounds. What is the weight of the water in a radiator which holds 4 $\frac{1}{2}$ gallons?

f. The weight of a sheet of aluminum is 16 $\frac{3}{4}$ pounds. What is the weight of $\frac{2}{3}$ of this sheet?

g. If each leg of a table is 4 $\frac{3}{7}$ feet long, how much lumber is needed for 4 legs?

ASSIGNMENT SHEET #3

h. Each foot of 2 × 4 pine weighs 5/8 pound, how much does 5 1/2 feet weigh?

i. If a #2 box of nails weighs 6 5/8 pounds, how much do 2 1/2 boxes weigh?

j. If 3rd class postage is 7 1/2¢ per pound, how much would it cost to mail a package weighing 4 2/3 pounds?

2. Find the amount of ingredients needed for the changes in these recipes.

a. Ruth wants to make two orange-lemon chiffon pies. Following is a list of ingredients and the amount of ingredients needed for one pie. Figure the amount of ingredients needed for two pies. Place your answer in the column named Two Pies. What figure will you use to multiply by?

	One Pie	Two Pies
1)	2 T. unflavored gelatin	_____T. unflavored gelatin
2)	1/2 c. lemon juice	_____c. lemon juice

ASSIGNMENT SHEET #3

3)	1/2 c. orange juice	_____c. orange juice
4)	2/3 tsp. grated lemon rind	_____tsp. grated lemon rind
5)	3/4 tsp. grated orange rind	_____tsp. grated orange rind
6)	1/3 c. nonfat dry milk	_____c. nonfat dry milk
7)	3/4 c. water	_____c. water
8)	3 eggs	_____eggs
9)	1/4 tsp. salt	_____tsp. salt
10)	1/2 tsp. cream of tartar	_____tsp. cream of tartar
11)	2/3 c. sugar	_____c. sugar

b. Sue wants to make some tomato sauce. The ingredients for three cups of sauce are listed below. She wants to make nine cups of sauce. Figure the amounts of ingredients needed for nine cups of sauce. Place your answer in the blank space provided in the right hand column. What number will you use to multiply by to increase ingredients to make nine cups of sauce?

	Three Cups	Nine Cups
1)	2 1/2 T. vegetable oil	_____T. vegetable oil
2)	3 1/3 T. flour	_____T. flour
3)	1 1/4 tsp. salt	_____tsp. salt
4)	1 1/4 c. diced celery	_____c. diced celery
5)	1 1/3 c. diced onion	_____c. diced onion
6)	1 bay leaf	_____bay leaves
7)	4 cloves	_____cloves
8)	2 3/4 c. canned tomatoes	_____c. canned tomatoes
9)	3/4 c. water	_____c. water

ASSIGNMENT SHEET #3

c. Joe is planning to make cookies. He must make one-half of the recipe because he does not have enough ingredients to make the full recipe. Since he is going to make one-half of the recipe, what number will you multiply by to reduce the recipe for him? Place the amount of ingredients needed for one-half of the recipe in the blank space provided in the right hand column.

	Recipe	One-half of Recipe
1)	1 egg	_____egg
2)	3/4 c. vegetable oil	_____c. vegetable oil
3)	7/8 c. brown sugar	_____c. brown sugar
4)	1/3 c. molasses	_____c. molasses
5)	3/4 c. quick oats	_____c. quick oats
6)	2 c. sifted flour	_____c. sifted flour
7)	1 tsp. baking powder	_____tsp. baking powder
8)	1/2 tsp. cinnamon	_____tsp. cinnamon
9)	1/3 tsp. ginger	_____tsp. ginger
10)	1/4 tsp. cloves	_____tsp. cloves
11)	2/3 tsp. salt	_____tsp. salt

d. Joan wants to make one and one-half times the following recipe. Figure the amount of ingredients she will need to make one and one-half times the recipe. What number will she multiply by to increase the amount of ingredients?

	Recipe	One and One-half Recipe
1)	1/2 c. diced bacon	_____c. diced bacon
2)	1 1/2 c. diced onion	_____c. diced onion
3)	1 1/4 c. diced carrots	_____c. diced carrots
4)	1 1/4 c. diced potatoes	_____c. diced potatoes
5)	3/4 c. diced green pepper	_____c. diced green peppers
6)	3/4 c. diced celery	_____c. diced celery
7)	1 2/3 c. boiling water	_____c. boiling water

ASSIGNMENT SHEET #3

8)	1 No. 2 can tomatoes	_____No. 2 can tomatoes
9)	1 1/4 tsp. salt	_____tsp. salt
10)	2 1/2 T. minced parsley	_____T. minced parsley

e. Linda decided to make cheese delights for a snack to serve with fruit juice. She wants to make one-third of the recipe. What number will she multiply by? Figure the amounts of ingredients she will need. Place your answer in the space provided in the right column.

	Recipe	Reduced Recipe
1)	1 1/2 c. margarine	_____c. margarine
2)	1 1/3 lb. grated cheddar cheese	_____lb. grated cheddar cheese
3)	1 3/4 c. sifted flour	_____c. sifted flour
4)	3/8 tsp. cayenne pepper	_____tsp. cayenne pepper
5)	1 1/2 tsp. salt	_____tsp. salt
6)	1 2/3 tsp. paprika	_____tsp. paprika

f. The following ingredients are necessary to make potato salad for five people. Shirley wants enough salad to serve ten people. What number will you multiply by to increase the recipe the correct amount? Figure the amount of ingredients she will need for ten people. Place your answer in the space provided in the right column.

	Recipe	Increased Recipe
1)	3 1/2 c. diced potatoes	_____c. diced potatoes
2)	1 1/4 c. diced celery	_____c. diced celery
3)	1/4 c. diced onions	_____c. diced onions
4)	2/3 c. grated carrot	_____c. grated carrot
5)	1 3/4 T. minced parsley	_____T. minced parsley
6)	2 1/4 T. lemon juice	_____T. lemon juice
7)	1/2 tsp. dry mustard	_____tsp. dry mustard
8)	1 1/4 tsp. salt	_____tsp. salt
9)	1/8 tsp. pepper	_____tsp. pepper

ASSIGNMENT SHEET #3

10)	1/8 tsp. celery salt	_____tsp. celery salt
11)	3 hard-cooked eggs	_____hard-cooked eggs
12)	2/3 c. mayonnaise	_____c. mayonnaise

MULTIPLYING FRACTIONS
UNIT VI

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. 3/8
2. 8/15
3. 55/72
4. 3/10
5. 18/35
6. 4/15
7. 1/5
8. 35/48
9. 6/35
10. 28/45
11. 6/35
12. 28/45
13. 10/63
14. 27/80
15. 10/63
16. 10/21
17. 65/84
18. 6/35
19. 4/27
20. 11/32
21. 1/6
22. 4/15
23. 10/21
24. 35/72
25. 1/6
26. 1/10
27. 5/28
28. 5/12
29. 1/10
30. 7/12

Assignment Sheet #2

1. 9/24 or 3/8
2. 3/4
3. 1/3
4. 16 2/3
5. 10 1/2
6. 1 1/4
7. 2 3/4
8. 7 7/20
9. 72
10. 4/15
11. 7/25
12. 4/9
13. 1 5/16
14. 18
15. 8 23/32
16. 6 7/8
17. 2 1/2
18. 27/64
19. 1 1/2
20. 1/6

Assignment Sheet #3

1. a. 62 1/2 pounds
   b. 22 1/2 pounds
   c. 12 pounds
   d. 16 pounds
   e. 37 1/2 pounds
   f. 11 1/6 pounds
   g. 17 5/7 feet
   h. 3 7/16 pounds
   i. 16 9/16 pounds
   j. 35¢

2. a. 2
   1) 4
   2) 1
   3) 1
   4) 1 1/3
   5) 1 1/2
   6) 2/3
   7) 1 1/2
   8) 6
   9) 1/2
   10) 1
   11) 1 1/3

ANSWERS TO ASSIGNMENT SHEETS

b. 3

1) 7 1/2
2) 10
3) 3 3/4
4) 3 3/4
5) 4
6) 3
7) 12
8) 8 1/4
9) 2 1/4

c. 1/2

1) 1/2
2) 3/8
3) 7/16
4) 1/6
5) 3/8
6) 1
7) 1/2
8) 1/4
9) 1/6
10) 1/8
11) 1/3

d. 1 1/2

1) 3/4
2) 2 1/4
3) 1 7/8
4) 1 7/8
5) 1 1/8
6) 1 1/8
7) 2 1/2
8) 1 1/2
9) 1 7/8
10) 3 3/4

e. 1/3

1) 1/2
2) 4/9
3) 7/12
4) 1/8
5) 1/2
6) 5/9

f. 2

1) 7
2) 2 1/2
3) 1/2
4) 1 1/3
5) 3 1/2
6) 4 1/2
7) 1
8) 2 1/2
9) 1/4
10) 1/4
11) 6
12) 1 1/3

MULTIPLYING FRACTIONS
UNIT VI

TEST

NAME _____ SCORE _____

1. Multiply these fractions and reduce the answers.

a. $\frac{1}{2} \times \frac{2}{3} =$

b. $\frac{5}{6} \times \frac{7}{8} =$

c. $\frac{4}{5} \times \frac{1}{3} =$

d. $\frac{3}{7} \times \frac{1}{9} =$

e. $\frac{4}{8} \times \frac{1}{2} =$

f. $\frac{1}{2} \times \frac{1}{2} =$

g. $\frac{7}{8} \times \frac{3}{4} =$

h. $\frac{6}{11} \times \frac{1}{9} =$

i. $\frac{1}{5} \times \frac{4}{7} =$

j. $\frac{2}{3} \times \frac{3}{4} =$

k. $\frac{15}{20} \times \frac{1}{2} =$

l. $\frac{4}{7} \times \frac{1}{3} =$

m. $\frac{1}{2} \times \frac{1}{4} =$

n. $\frac{3}{8} \times \frac{1}{5} =$

o. $\frac{7}{9} \times \frac{4}{6} =$

TEST

2. Multiply these mixed numbers and reduce the answers.

a. $3\frac{1}{2} \times 1\frac{2}{3} =$

b. $4\frac{1}{3} \times 3\frac{2}{5} =$

c. $2\frac{1}{8} \times 1\frac{1}{5} =$

d. $5\frac{1}{5} \times 1\frac{4}{7} =$

e. $1\frac{1}{5} \times 1\frac{1}{5} =$

f. $\frac{4}{7} \times 16 =$

g. $8 \times \frac{1}{3} =$

h. $\frac{1}{5} \times \frac{5}{5} =$

i. $1\frac{6}{7} \times 1\frac{3}{4} =$

j. $16\frac{2}{3} \times 3\frac{2}{16} =$

3. Solve these story problems.

a. The height of a single step (the riser) of a flight of stairs is 7 1/2 inches. What is the height of 12 stairs? What is the height of 2 stairs?

b. If a 2 x 4 is actually 1 5/8 inches thick, how thick is a stack of 2 x 4's containing 27 boards.

TEST

c. One box of 1/4" bolts weigh 37 1/2 pounds. How much do 3 1/4 boxes weigh?

d. If a man can roof 90 1/2 square feet in an hour, how much will he roof in 3 1/4 hours?

e. If your car uses 1 gallon of gas to go 13 1/3 miles, how many miles can you travel on 7 5/8 gallons?

f. Ruth wants to make chocolate fluff dessert to serve eight people. Following is a list of ingredients needed for four people. Figure the amounts of ingredients needed for eight people. What number will you multiply by?

1) 1/2 c. nonfat dry milk	_____c. nonfat dry milk
2) 3/5 c. water	_____c. water
3) 12 marshmallows	_____marshmallows
4) 3/4 c. chocolate chips	_____c. chocolate chips

TEST

5)	2 eggs	_____eggs
6)	2/3 tsp. vanilla	_____tsp. vanilla
7)	7/8 c. graham cracker crumbs	_____c. graham cracker crumbs
8)	1/3 c. heavy cream, whipped	_____c. heavy cream, whipped
9)	1/4 c. toasted almonds	_____c. toasted almonds

g. Margaret is planning a broccoli-cheese casserole for the evening meal. She needs to make only one-half of the recipe. The ingredients are listed below. What number will you multiply by to reduce the recipe for her use?

1)	2 pkg. frozen broccoli	_____pkg. frozen broccoli
2)	3/4 c. nonfat dry milk	_____c. nonfat dry milk
3)	1 c. water	_____c. water
4)	2 slightly beaten eggs	_____slightly beaten eggs
5)	1/4 lb. cheese, grated	_____lb. cheese, grated
6)	2 1/2 T. lemon juice	_____T. lemon juice
7)	1 1/2 T. vegetable oil	_____T. vegetable oil
8)	1 tsp. salt	_____tsp. salt
9)	1/8 tsp. pepper	_____tsp. pepper
10)	1/8 tsp. celery salt	_____tsp. celery salt

MULTIPLYING FRACTIONS
UNIT VI

ANSWERS TO TEST

1. a. $\frac{1}{3}$
   b. $\frac{35}{48}$
   c. $\frac{4}{15}$
   d. $\frac{1}{21}$
   e. $\frac{1}{4}$
   f. $\frac{1}{4}$
   g. $\frac{21}{32}$
   h. $\frac{2}{33}$
   i. $\frac{4}{35}$
   j. $\frac{1}{2}$
   k. $\frac{3}{8}$
   l. $\frac{4}{21}$
   m. $\frac{1}{8}$
   n. $\frac{3}{40}$
   o. $\frac{14}{27}$

2. a. $5\frac{5}{6}$
   b. $14\frac{11}{15}$
   c. $2\frac{11}{20}$
   d. $8\frac{6}{35}$
   e. $1\frac{11}{25}$
   f. $9\frac{1}{7}$
   g. $2\frac{2}{3}$
   h. $\frac{1}{5}$
   i. $3\frac{1}{4}$
   j. $52\frac{1}{12}$

3. a. 90 inches, 15 inches
   b. $43\frac{7}{8}$ inches
   c. $121\frac{7}{8}$ pounds
   d. $294\frac{1}{8}$ square feet
   e. $102\frac{15}{16}$ miles
   f. 2
      1) 1
      2) $1\frac{1}{5}$
      3) 24
      4) $1\frac{1}{2}$
      5) 4
      6) $1\frac{1}{3}$
      7) $1\frac{3}{4}$
      8) $\frac{2}{3}$
      9) $\frac{1}{2}$

   g. $\frac{1}{2}$
      1) 1
      2) $\frac{3}{8}$
      3) $\frac{1}{2}$
      4) 1
      5) $\frac{1}{8}$
      6) $1\frac{1}{4}$
      7) $\frac{3}{4}$
      8) $\frac{1}{2}$
      9) $\frac{1}{16}$
      10) $\frac{1}{16}$

DIVIDING FRACTIONS
UNIT VII

UNIT OBJECTIVE

After completing this unit, the students should be able to divide fractions and mixed numbers. They should express answers in lowest terms. This ability will be evidenced by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Divide and reduce ten problems containing common fractions.
2. Divide and reduce fifteen problems involving mixed numbers.
3. Solve four story problems involving division of mixed numbers.

DIVIDING FRACTIONS
UNIT VII

SUGGESTED ACTIVITIES

I. Unit contents

A. Objective sheet

B. Suggested activities

C. Pretest

D. Answers to pretest

E. Information sheets

F. Assignment sheets

1. Assignment Sheet #1 — Division of Fractions
2. Assignment Sheet #2 — Division of Mixed Numbers
3. Assignment Sheet #3 — Story Problems

G. Answers to assignment sheets

H. Test

I. Answers to test

II. Instructor's guide

A. Order (or obtain) materials to supplement unit

B. Give pretest

C. Critique pretest and go over results in class

(NOTE: Be sure to take up pretests after discussing them in class. Students who score 85 percent or higher on the pretest do not need to study this unit.)

D. Provide students with copies of unit

E. Discuss unit and specific objectives

- Explain that students will learn how to divide fractions and mixed numbers; also explain that students will learn how to solve story problems that require dividing fractions.

SUGGESTED ACTIVITIES

- Give students some examples of how they might have to use these skills in everyday situations.

F. Discuss information and assignment sheets

1. Explain how to divide and reduce fractions using Information Sheet, Section I.

   - Demonstrate how to divide fractions by putting examples on the chalkboard and working through them; have students take notes.

   - Put some sample problems on the chalkboard for the students to work; after the students have completed the problems at their seats, have students put their solutions on the chalkboard for the class to critique; discuss the answers.

   - Have students complete Assignment Sheet #1.

   - Discuss answers in class.

2. Discuss how to divide mixed fractions; use Information Sheet, Section II.

   - Demonstrate how to divide mixed numbers by putting examples on the chalkboard and working through them; have students take notes.

   - Put some sample problems on the chalkboard for the students to work; after the students have completed the problems at their seats, have students put their solutions on the chalkboard for the class to critique; discuss the answers.

   - Have students complete Assignment Sheet #2.

   - Discuss answers in class.

3. Explain how to solve story problems that contain fractions using Information Sheet, Section III.

   - Demonstrate how to solve story problems by putting examples on the chalkboard and working through them; have students take notes.

   - Put some sample problems on the chalkboard for the students to work; after the students have completed the problems at their seats, have students put their solutions on the chalkboard for the class to critique; discuss the answers.

SUGGESTED ACTIVITIES

- Have students complete Assignment Sheet #3.
- Discuss answers in class.

G. Give test

H. Critique test and discuss in class

I. Reteach and retest as necessary

III. Unit references

Spann, Margaret. *Related Vocational Math*. Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

DIVIDING FRACTIONS
UNIT VII

PRETEST

NAME _____ SCORE _____

1. Divide these fractions, and reduce the answers.

   a. $\frac{1}{4} \div \frac{3}{8} =$

   b. $\frac{5}{6} \div \frac{2}{3} =$

   c. $\frac{4}{7} \div \frac{3}{8} =$

   d. $\frac{6}{8} \div \frac{4}{5} =$

   e. $\frac{8}{15} \div \frac{2}{5} =$

2. Divide these mixed numbers, and reduce answers.

   a. $\frac{6}{13} \div 2\frac{2}{3} =$

   b. $\frac{7}{16} \div 3\frac{1}{4} =$

   c. $2\frac{1}{4} \div 4\frac{1}{3} =$

   d. $3\frac{3}{5} \div 2\frac{6}{11} =$

   e. $4\frac{1}{2} \div 3\frac{3}{4} =$

PRETEST

3. Solve these story problems involving division of mixed numbers.

   a. If Sue bought 5 7/8 yards of material but only used 1/2 of it, how much material did she have left over?

   b. If a board 8 1/2 feet long were cut into 4 pieces of equal length, what would be the length of each board?

   c. If a shipment of oranges weighs 110 1/2 pounds and there are 8 crates in the shipment, how much does each crate weigh?

DIVIDING FRACTIONS
UNIT VII

ANSWERS TO PRETEST

1. a. $\frac{2}{3}$
   b. $1\frac{1}{4}$
   c. $1\frac{11}{21}$
   d. $\frac{15}{16}$
   e. $1\frac{1}{3}$

2. a. $\frac{9}{52}$
   b. $\frac{7}{52}$
   c. $\frac{27}{52}$
   d. $1\frac{29}{70}$
   e. $1\frac{1}{5}$

3. a. $2\frac{15}{16}$ yards
   b. $2\frac{1}{8}$ feet
   c. $13\frac{13}{16}$ pounds

DIVIDING FRACTIONS
UNIT VII

INFORMATION SHEET

I. Divide fractions

A. Invert (turn over) the divisor (second fraction)

(NOTE: The divisor follows the division sign.)

B. Multiply the resulting fractions

C. Reduce the answer, if possible

EXAMPLE: $\frac{1}{3} \div \frac{2}{5}$

$$\frac{1}{3} \times \frac{5}{2} = \frac{1 \times 5}{3 \times 2} = \frac{5}{6}$$

II. Divide mixed numbers

A. Rewrite the mixed numbers as improper fractions

B. Invert the divisor

C. Multiply the resulting fractions

D. Reduce the answer, if possible

EXAMPLE: $3\frac{1}{2} \div 1\frac{1}{4} = \frac{7}{2} \div \frac{5}{4}$

$$= \frac{7}{2} \times \frac{4}{5} = \frac{7 \times 4}{2 \times 5} = \frac{28}{10} = 2\frac{8}{10} = 2\frac{4}{5}$$

III. Story problems

A. Read the problem

B. Decide on the procedures necessary to solve the problem

C. Write and solve the numerical problem

DIVIDING FRACTIONS
UNIT VII

ASSIGNMENT SHEET #1 — DIVISION OF FRACTIONS

NAME _____ SCORE _____

1. Divide and reduce the answers.

a. $\frac{1}{3} \div \frac{1}{2} =$

b. $\frac{1}{2} \div \frac{1}{3} =$

c. $\frac{1}{4} \div \frac{3}{4} =$

d. $\frac{1}{7} \div \frac{1}{3} =$

e. $\frac{4}{8} \div \frac{2}{8} =$

f. $\frac{6}{7} \div \frac{3}{4} =$

g. $\frac{5}{6} \div \frac{1}{5} =$

h. $\frac{5}{7} \div \frac{3}{5} =$

i. $\frac{1}{2} \div \frac{1}{2} =$

j. $\frac{2}{3} \div \frac{1}{5} =$

k. $\frac{2}{16} \div \frac{4}{16} =$

l. $\frac{1}{8} \div \frac{1}{4} =$

m. $\frac{3}{4} \div \frac{6}{7} =$

n. $\frac{1}{5} \div \frac{5}{6} =$

o. $\frac{2}{3} \div \frac{1}{4} =$

p. $\frac{7}{8} \div \frac{9}{10} =$

q. $\frac{12}{16} \div \frac{5}{8} =$

r. $\frac{13}{16} \div \frac{5}{6} =$

s. $\frac{5}{6} \div \frac{11}{12} =$

t. $\frac{9}{10} \div \frac{3}{4} =$

ASSIGNMENT SHEET #1

2. Solve these story problems. Do not take into account the waste from cutting.

   a. How many pieces of $\frac{1}{16}$ inch pipe can be cut from a piece of stock $\frac{7}{8}$ inch long?

   b. How many $\frac{1}{8}$ inch segments will fit into a large segment which measures $\frac{20}{32}$ inch?

   c. How many $\frac{1}{16}$ inch segments are there in $\frac{5}{8}$ inch?

ASSIGNMENT SHEET #1

d. How many $\frac{1}{4}$ inch strips of aluminum can be cut from a piece of stock $\frac{16}{8}$ inch?

e. How many $\frac{4}{16}$ inch tacks can be made from stock measuring $\frac{128}{64}$ inch?

DIVIDING FRACTIONS
UNIT VII

ASSIGNMENT SHEET #2 — DIVISION OF MIXED NUMBERS

NAME _____ SCORE _____

Directions: Multiply and reduce the answers.

1. $\frac{4}{5} \div \frac{1}{8} =$
2. $\frac{7}{9} \div \frac{1}{3} =$
3. $\frac{5}{7} \div \frac{4}{5} =$
4. $\frac{1}{3} \div \frac{7}{9} =$
5. $\frac{10}{12} \div \frac{1}{3} =$
6. $4\frac{1}{3} \div 2\frac{1}{2} =$
7. $7\frac{2}{5} \div 2\frac{1}{2} =$
8. $5\frac{2}{3} \div 1\frac{4}{5} =$
9. $5 \div 6\frac{1}{4} =$
10. $3\frac{1}{3} \div 1\frac{2}{5} =$
11. $3 \div 2\frac{2}{3} =$
12. $6\frac{1}{4} \div 3\frac{1}{3} =$
13. $1\frac{1}{2} \div 1\frac{1}{5} =$
14. $6\frac{1}{4} \div 5 =$
15. $3\frac{1}{5} \div 1\frac{1}{3} =$
16. $1\frac{5}{8} \div 1\frac{7}{32} =$
17. $4\frac{2}{3} \div 1\frac{3}{5} =$
18. $11\frac{1}{4} \div 2\frac{1}{2} =$
19. $2\frac{1}{16} \div 1\frac{3}{8} =$
20. $2\frac{1}{4} \div 3\frac{3}{8} =$
21. $1\frac{3}{5} \div 3\frac{1}{5} =$
22. $4\frac{1}{2} \div \frac{3}{5} =$
23. $2\frac{2}{3} \div 7\frac{1}{2} =$
24. $3\frac{3}{4} \div 4\frac{2}{5} =$
25. $1\frac{7}{8} \div 1\frac{1}{3} =$

DIVIDING FRACTIONS
UNIT VII

ASSIGNMENT SHEET #3 — STORY PROBLEMS

NAME _____ SCORE _____

1. Pieces $1\ 2/16$ inches long were cut from a strip of metal 6 feet long. How many pieces were made?

2. Jim ran $2\ 1/2$ miles in 15 minutes. What is his rate per hour?

3. A plane traveled 12 miles in $2\ 2/5$ minutes. What was the plane's rate?

4. A space capsule traveled $6\ 7/8$ miles in $1\ 3/8$ seconds. What was its rate?

ASSIGNMENT SHEET #3

5. At 25 miles per hour, how far can a penguin swim in 1/4 hour?

6. How many planks 2 1/2 feet long can you get from a board 15 feet long?

7. Gold ribbon is to be used for school medals. How many pieces of ribbon, each 3 1/4 inches long can be cut from a piece 9 3/4 inches long?

8. Sam's best speed (rate) on his bicycle is 6 1/4 miles per hour. At this rate how long would it take him to ride 12 1/2 miles?

ASSIGNMENT SHEET #3

9. Mr. Tarson owns a piece of land that contains 425 acres, which he is going to divide into small lots each containing 1/2 acre. How many house lots does the land contain?

10. A grocer bought 55 3/4 pounds of bacon which he divided into 1/2 pound packages. How many packages did he have for his customers?

11. A strip of aluminum 26 1/4 inches long is to be sheared into 5 pieces of equal length. What is the length of each piece?

12. An ostrich can cover 6 2/3 yards per stride. How many strides will the bird make in running 100 yards.

ASSIGNMENT SHEET #3

13. A sheet of metal is 25 1/2 inches wide. How many strips, each 2 5/8 inches wide, can be cut from the sheet?

14. A strip of brass 6 1/4 inches long is required for a strap key. How many such strips can be cut from a piece of brass 72 inches long?

15. One foot of 1 1/8 inches round steel bar weighs 3 1/3 pounds. How long is a piece that weighs 50 pounds.

16. How many thumb screws 7/8 inch long can be cut from a bar of cold rolled steel 36 inches long?

ASSIGNMENT SHEET #3

17. How many $\frac{9}{16}$ inch bars can be placed side by side in a space of 8 $\frac{1}{2}$ inches?

18. A board 11 feet long is to be cut into partitions for mailboxes. How many partitions 7 $\frac{3}{4}$ inches long can be cut?

19. How many binding posts $\frac{5}{6}$ inch long can be made from a rod 25 inches long?

20. How many book shelves 2 $\frac{1}{3}$ feet long can be cut from a board 14 feet long?

DIVIDING FRACTIONS
UNIT VII

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. $\frac{2}{3}$
   b. $\frac{3}{2}$ or $1\frac{1}{2}$
   c. $\frac{1}{3}$
   d. $\frac{3}{7}$
   e. 2
   f. $\frac{8}{7}$ or $1\frac{1}{7}$
   g. $\frac{25}{6}$ or $4\frac{1}{6}$
   h. $\frac{25}{21}$ or $1\frac{4}{21}$
   i. 1
   j. $\frac{10}{3}$ or $3\frac{1}{3}$
   k. $\frac{1}{2}$
   l. $\frac{1}{2}$
   m. $\frac{7}{8}$
   n. $\frac{6}{25}$
   o. $\frac{8}{3}$ or $2\frac{2}{3}$
   p. $\frac{35}{36}$
   q. $\frac{6}{5}$ or $1\frac{1}{5}$
   r. $\frac{39}{40}$
   s. $\frac{10}{11}$
   t. $\frac{6}{5}$ or $1\frac{1}{5}$

2. a. 14 pieces
   b. 5 segments
   c. 10 segments
   d. 8 strips
   e. 8 tacks

Assignment Sheet #2

1. $\frac{32}{5}$ or $6\frac{2}{5}$
2. $\frac{7}{3}$ or $2\frac{1}{3}$
3. $\frac{25}{28}$
4. $\frac{3}{7}$
5. $\frac{5}{2}$ or $2\frac{1}{2}$
6. $\frac{26}{15}$ or $1\frac{11}{15}$
7. $\frac{74}{25}$ or $2\frac{24}{25}$
8. $\frac{85}{27}$ or $3\frac{4}{27}$
9. $\frac{4}{5}$
10. $\frac{50}{21}$ or $2\frac{8}{21}$
11. $\frac{9}{8}$ or $1\frac{1}{8}$
12. $\frac{15}{8}$ or $1\frac{7}{8}$
13. $\frac{5}{4}$ or $1\frac{1}{4}$
14. $\frac{5}{4}$ or $1\frac{1}{4}$
15. $\frac{12}{5}$ or $2\frac{2}{5}$
16. $\frac{4}{3}$ or $1\frac{1}{3}$
17. $1\frac{1}{3}$
18. $\frac{9}{2}$ or $4\frac{1}{2}$
19. $\frac{3}{2}$ or $1\frac{1}{2}$
20. $\frac{2}{3}$
21. $\frac{1}{2}$
22. $\frac{15}{2}$ or $7\frac{1}{2}$
23. $\frac{16}{45}$
24. $\frac{75}{88}$
25. $\frac{45}{32}$ or $1\frac{13}{32}$

Assignment Sheet #3

1. $5\frac{1}{3}$ pieces
2. $5\frac{1}{3}$ miles per hour
3. 5 miles per minute
4. 5 miles per second or 18000 mph
5. $6\frac{1}{4}$
6. 6 planks
7. 3 ribbons
8. 2 hours
9. 850 houses
10. $111\frac{1}{2}$ packages
11. $5\frac{1}{4}$ inches
12. 15 strides
13. $9\frac{5}{7}$ or 9 strips
14. $11\frac{13}{25}$ or 11 strips
15. 15 inches
16. $41\frac{1}{7}$ or 41 thumb screws
17. $15\frac{1}{9}$ or 15 bars
18. $17\frac{1}{31}$ or 17 partitions
19. 30 posts
20. 6 shelves

DIVIDING FRACTIONS
UNIT VII

TEST

NAME _____ SCORE _____

1. Divide these fractions and reduce the answers.

a. $\frac{1}{2} \div \frac{1}{5} =$

b. $\frac{7}{8} \div \frac{2}{3} =$

c. $\frac{9}{10} \div \frac{1}{3} =$

d. $\frac{11}{12} \div \frac{4}{7} =$

e. $\frac{4}{9} \div \frac{7}{16} =$

f. $\frac{1}{4} \div \frac{3}{4} =$

g. $\frac{5}{8} \div \frac{5}{6} =$

h. $\frac{3}{16} \div \frac{5}{12} =$

i. $\frac{2}{3} \div \frac{5}{12} =$

j. $\frac{2}{3} \div \frac{4}{5} =$

2. Divide these mixed numbers and reduce the answers.

a. $\frac{5}{12} \div 8\frac{1}{3} =$

b. $\frac{5}{6} \div 1\frac{1}{9} =$

c. $\frac{2}{3} \div 1\frac{1}{4} =$

d. $\frac{7}{8} \div 3 =$

e. $\frac{3}{16} \div 1\frac{3}{5} =$

f. $4 \div \frac{1}{3} =$

TEST

g. $1\frac{1}{8} \div \frac{3}{32} =$

h. $8\frac{3}{4} \div \frac{7}{8} =$

i. $\frac{6}{7} \div 9 =$

j. $\frac{2}{5} \div 10 =$

k. $1\frac{1}{2} \div \frac{5}{8} =$

l. $2\frac{1}{4} \div 1\frac{3}{10} =$

m. $4\frac{1}{5} \div 1\frac{3}{4} =$

n. $1\frac{3}{8} \div 4\frac{2}{5} =$

o. $1\frac{1}{3} \div 1\frac{1}{2} \div 1\frac{2}{5} =$

3. Solve these story problems involving division of mixed numbers.

   a. If a board 10 ¼ feet long was cut into 6 pieces of equal length, what would be the length of each board? **Disregard waste.**

   b. If 4 ½ pounds of nails cost $2.00, how much does one pound cost?

TEST

c. A ship steamed 90 miles in 8 1/3 hours. How far did it steam in 1 hour?

d. The scale of a blueprint of a factory is 1/8 inch = 1 foot. Find the actual dimensions of a room measuring 2 7/8 × 3 5/16 inches.

DIVIDING FRACTIONS
UNIT VII

ANSWERS TO TEST

1. a. $5/2$ or $2\ 1/2$
   b. $21/16$ or $1\ 5/16$
   c. $27/10$ or $2\ 7/10$
   d. $77/48$ or $1\ 29/48$
   e. $64/63$ or $1\ 1/63$
   f. $1/3$
   g. $3/4$
   h. $9/20$
   i. $8/5$ or $1\ 3/5$
   j. $5/6$

2. a. $1/20$
   b. $3/4$
   c. $8/15$
   d. $7/24$
   e. $15/128$
   f. 12
   g. 12
   h. 10
   i. $2/21$
   j. $1/25$
   k. $12/5$ or $2\ 2/5$
   l. $45/26$ or $1\ 19/26$
   m. $12/5$ or $2\ 2/5$
   n. $5/16$
   o. $40/63$

3. a. $1\ 17/24$ feet
   b. $44\ 4/9¢$ or $44¢$ or $45¢$
   c. $10\ 4/5$ miles
   d. $23 \times 26\ 1/2$ feet

FRACTIONS REVIEW
UNIT VIII

UNIT OBJECTIVE

After completing this unit, the student should demonstrate the ability to identify proper and improper fractions, reduce fractions to lowest terms, perform the four basic operations with fractions, and solve word problems involving fractions. This ability will be demonstrated by scoring 85 percent on the assignment sheet.

SPECIFIC OBJECTIVES

After completing this unit, the student should be able to

1. Identify proper and improper fractions.
2. Write fractions reduced to lowest terms.
3. Write improper fractions as mixed numbers.
4. Write mixed numbers as improper fractions.
5. Write equivalent fractions when given the numerator or denominator.
6. Add fractions and mixed numbers.
7. Subtract fractions and mixed numbers.
8. Multiply fractions and mixed numbers.
9. Divide fractions and mixed numbers.
10. Solve story problems involving fractions.

FRACTIONS REVIEW
UNIT VIII

SUGGESTED ACTIVITIES

I. Unit contents

A. Objective sheet

B. Suggested activities

C. Information sheets

D. Assignment Sheet #1 — Fraction Review

E. Answers to assignment sheets

F. Test

G. Answers to test

II. Instructor's guide

A. Order (or obtain) materials to supplement unit

B. Provide students with copies of unit

C. Discuss unit and specific objectives

- Explain that this is a review of all the work on fractions the students have done.
- Explain that students will have a comprehensive test at the end of the review.

D. Discuss information and assignments

1. Review proper and improper fractions using Information Sheet, Section I.
2. Review reducing fractions to lowest terms using Information Sheet, Section II.
3. Review writing improper fractions as mixed numbers; use Information Sheet, Section III.
4. Go over changing mixed numbers to improper fractions; use Information Sheet, Section IV.
5. Explain equivalent fractions using Information Sheet, Section V.

SUGGESTED ACTIVITIES

6. Review adding fractions and mixed numbers; use Information Sheet, Section VI.

7. Review subtracting fractions and mixed numbers; use Information Sheet, Section VII.

8. Go over multiplying fractions and mixed numbers using Information Sheet, Section VIII.

9. Explain dividing fractions and mixed numbers using Information Sheet, Section IX.

10. Review solving story problems that contain fractions and mixed numbers; use Information Sheet, Section X.

E. Give test

F. Critique test and discuss in class

III. Unit references

Spann, Margaret. *Related Vocational Math*. Stillwater, Oklahoma: State Department of Vocational and Technical Education/Curriculum and Instructional Materials Center, 1972.

FRACTIONS REVIEW
UNIT VIII

INFORMATION SHEET

I. Types of fractions

A. Proper — The numerator is smaller than the denominator

EXAMPLES: $\frac{3}{4}, \frac{5}{9}, \frac{1}{3}$

B. Improper — The numerator is equal to or larger than the denominator

EXAMPLES: $\frac{5}{3}, \frac{4}{4}, \frac{12}{2}$

II. Reduce fractions

A. Divide both numerator and denominator by the same number

B. Continue dividing until one is the only number left that will divide both the numerator and denominator

EXAMPLE: $\frac{16}{52}$; $\frac{16}{52} \div \frac{2}{2} = \frac{8}{26}$; $\frac{8}{26} \div \frac{2}{2} = \frac{4}{13}$

III. Change improper fractions to mixed numbers — Divide the denominator into the numerator

EXAMPLE: $\frac{29}{5}$; $5\overline{)29}^{\,5}$ ($\underline{25}$, 4); $\frac{29}{5} = 5\frac{4}{5}$

IV. Change mixed numbers to improper fractions

A. Multiply the denominator and the whole number

B. Add the numerator

C. Write the result over the denominator

EXAMPLE: $5\frac{2}{3}$; $(3 \times 5) + 2 = 17$; $5\frac{2}{3} = \frac{17}{3}$

INFORMATION SHEET

V. Equivalent fractions — Different names for the same fraction

EXAMPLE: $\frac{2}{3} = \frac{4}{6}$

VI. Addition

A. Write the fractions as like fractions

B. Add the numerators

C. Write the common denominator

D. Reduce the answer, if possible

VII. Subtraction

A. Write the fractions as like fractions

B. Subtract the numerators

C. Write the common denominator

D. Reduce the answer, if possible

VIII. Multiplication

A. Multiply the numerators

B. Multiply the denominators

C. Reduce the answer, if possible

IX. Division

A. Invert the divisor

B. Multiply the resulting fractions

C. Reduce the answer, if possible

X. Story problems

A. Read the problem

B. Decide on the operation necessary to solve the problem

C. Write the number problem and solve it

FRACTIONS REVIEW
UNIT VIII

ASSIGNMENT SHEET #1 — FRACTION REVIEW

NAME _____ SCORE _____

1. Identify the following as either proper or improper by writing the correct term by the fractions.

   a. $\frac{2}{3}$

   b. $\frac{7}{8}$

   c. $\frac{9}{8}$

   d. $\frac{3}{2}$

   e. $\frac{4}{5}$

2. Reduce these fractions to the lowest terms.

   a. $\frac{4}{8} =$

   b. $\frac{5}{15} =$

   c. $\frac{6}{9} =$

   d. $\frac{21}{39} =$

   e. $\frac{15}{75} =$

ASSIGNMENT SHEET #1

3. Write the following improper fractions as mixed numbers. Reduce the answers if possible.

   a. $\frac{17}{5}$ =

   b. $\frac{32}{31}$ =

   c. $\frac{15}{2}$ =

   d. $\frac{17}{14}$ =

   e. $\frac{12}{10}$ =

4. Write the following mixed numbers as improper fractions.

   a. $3\ \frac{1}{2}$ =

   b. $2\ \frac{1}{3}$ =

   c. $9\ \frac{1}{2}$ =

   d. $15\ \frac{4}{7}$ =

   e. $1\ \frac{1}{4}$ =

5. Write equivalent fractions by filling in the blanks.

   a. $\frac{2}{3} = \frac{?}{9}$ _____

   b. $\frac{5}{?} = \frac{10}{20}$ _____

   c. $\frac{1}{3} = \frac{?}{21}$ _____

ASSIGNMENT SHEET #1

d. $\frac{10}{12} = \frac{?}{6}$ _____

e. $\frac{4}{5} = \frac{?}{50}$ _____

6. Add the following fractions and mixed numbers. Reduce the answers.

a. $\frac{1}{3} + \frac{2}{4}$

b. $\frac{1}{2} + \frac{1}{2}$

c. $\frac{3}{4} + \frac{1}{5}$

d. $3\frac{1}{4} + 2\frac{1}{6}$

e. $5\frac{1}{2} + 4\frac{3}{8}$

7. Subtract the following fractions and mixed numbers. Reduce the answers.

a. $\frac{5}{12} - \frac{1}{3}$

b. $\frac{3}{4} - \frac{4}{8}$

c. $2\frac{1}{4} - \frac{5}{6}$

d. $1\frac{7}{8} - 1\frac{1}{4}$

e. $10\frac{5}{16} - 3\frac{7}{8}$

ASSIGNMENT SHEET #1

8. Multiply the following fractions and mixed numbers. Reduce the answers.

a. $\frac{1}{5} \times \frac{1}{3} =$

b. $2\frac{1}{2} \times 3\frac{1}{4} =$

c. $1\frac{1}{2} \times 2\frac{1}{4} =$

d. $\frac{5}{7} \times 3\frac{1}{2} =$

e. $2\frac{1}{5} \times \frac{1}{3} =$

9. Divide the following fractions and mixed numbers. Reduce the answers.

a. $\frac{1}{3} \div \frac{1}{3} =$

b. $\frac{1}{2} \div \frac{5}{8} =$

c. $3\frac{1}{3} \div 2\frac{1}{4} =$

d. $1\frac{1}{3} \div \frac{5}{6} =$

e. $\frac{7}{8} \div 3 =$

ASSIGNMENT SHEET #1

10. Solve these story problems.

a. John bought four boards. They were 3 1/2 feet long, 3 1/4 feet long, 4 1/8 feet long, and 5 1/3 feet long. He had 4 1/3 feet left. How many feet did he buy? How many feet did he use?

b. Bill bought 3 pieces of pipe each 4 1/2 feet long, and 4 pieces each 3 1/3 feet long. How many feet of pipe did he buy?

c. John, Jim, and Bill picked 8 gallons of strawberries. They sold 3 1/2 gallons and the rest were divided equally among the three boys. How much did each boy receive?

d. If boards are 7/8 inch thick, what is the thickness of 12 boards?

ASSIGNMENT SHEET #1

e. How many boards 3 1/4 feet long can be cut from a 20 foot board?

f. If a steer is fed 3/4 bales of hay each day for a week, how many bales of hay was fed?

g. A boy lived 1 1/3 miles from school. If he rode his bicycle each day, how many miles did he ride in five days?

h. Tom caught a fish that weighed 5 3/4 pounds. Jim caught one that weighed 7 1/3 pounds. How much larger was Jim's fish?

FRACTIONS REVIEW
UNIT VIII

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. proper
   b. proper
   c. improper
   d. improper
   e. proper

2. a. $1/2$
   b. $1/3$
   c. $2/3$
   d. $7/13$
   e. $1/5$

3. a. $3\ 2/5$
   b. $1\ 1/31$
   c. $7\ 1/2$
   d. $1\ 3/14$
   e. $1\ 1/5$

4. a. $7/2$
   b. $7/3$
   c. $19/2$
   d. $109/7$
   e. $5/4$

5. a. $6/9$
   b. $5/10$
   c. $7/21$
   d. $5/6$
   e. $40/50$

6. a. $5/6$
   b. 1
   c. $19/20$
   d. $5\ 5/12$
   e. $9\ 7/8$

7. a. $1/12$
   b. $1/4$
   c. $1\ 5/12$
   d. $5/8$
   e. $6\ 7/16$

ANSWERS TO ASSIGNMENT SHEETS

8. a. $\frac{1}{15}$
   b. $8\frac{1}{8}$
   c. $3\frac{3}{8}$
   d. $2\frac{1}{2}$
   e. $\frac{11}{15}$

9. a. 1
   b. $\frac{4}{5}$
   c. $1\frac{13}{27}$
   d. $1\frac{3}{5}$
   e. $\frac{7}{24}$

10. a. Bought $16\frac{5}{24}$, used $11\frac{7}{8}$
    b. $26\frac{5}{6}$ feet
    c. $1\frac{1}{2}$ gallons each
    d. $10\frac{1}{2}$ inches
    e. 6 boards
    f. $5\frac{1}{4}$ bales
    g. $6\frac{2}{3}$ miles
    h. $1\frac{7}{12}$ pounds

FRACTIONS REVIEW
UNIT VIII

TEST

NAME _____ SCORE _____

1. Identify the following as either proper or improper by writing the proper term by the fractions.

   a. $\frac{6}{7}$ _____

   b. $\frac{10}{5}$ _____

   c. $\frac{2}{1}$ _____

   d. $\frac{2}{3}$ _____

   e. $\frac{4}{4}$ _____

2. Reduce these fractions to the lowest terms.

   a. $\frac{16}{18}$ = _____

   b. $\frac{12}{15}$ = _____

   c. $\frac{9}{12}$ = _____

   d. $\frac{14}{21}$ = _____

   e. $\frac{24}{36}$ = _____

TEST

3. Write the following improper fractions as mixed numbers. Reduce the answers if possible.

   a. $\frac{16}{5} =$ _____

   b. $\frac{27}{8} =$ _____

   c. $\frac{14}{10} =$ _____

   d. $\frac{18}{4} =$ _____

   e. $\frac{21}{5} =$ _____

4. Write the following mixed numbers as improper fractions.

   a. $4\frac{2}{3} =$ _____

   b. $5\frac{5}{8} =$ _____

   c. $3\frac{2}{5} =$ _____

   d. $6\frac{7}{8} =$ _____

   e. $1\frac{4}{9} =$ _____

5. Write equivalent fractions by filling in the blanks.

   a. $\frac{2}{5} = \frac{?}{10}$ _____

   b. $\frac{6}{?} = \frac{2}{3}$ _____

   c. $\frac{?}{3} = \frac{5}{15}$ _____

TEST

d. $\frac{4}{5} = \frac{16}{?}$ ____

e. $\frac{6}{12} = \frac{?}{72}$ ____

6. Add the following fractions and mixed numbers. Reduce the answers.

a. $\frac{1}{3} + \frac{2}{5}$

b. $\frac{4}{7} + \frac{5}{8}$

c. $2\frac{1}{3} + 3\frac{6}{7}$

d. $3\frac{1}{4} + 7\frac{4}{5}$

e. $7\frac{1}{8} + 9\frac{3}{4}$

7. Subtract the following fractions and mixed numbers. Reduce the answers.

a. $\frac{6}{7} - \frac{1}{3}$

b. $\frac{9}{10} - \frac{2}{5}$

c. $1\frac{3}{4} - \frac{1}{2}$

d. $2\frac{7}{9} - 1\frac{1}{3}$

e. $6\frac{7}{8} - 4\frac{2}{3}$

TEST

8. Multiply the following fractions and mixed numbers. Reduce the answers.

   a. $\frac{3}{4} \times \frac{6}{5} =$

   b. $\frac{2}{5} \times \frac{3}{7} =$

   c. $2\frac{2}{3} \times 4\frac{3}{4} =$

   d. $6\frac{5}{8} \times 4\frac{2}{7} =$

   e. $3\frac{3}{9} \times 4\frac{1}{4} =$

9. Divide the following fractions and mixed numbers. Reduce the answers.

   a. $\frac{7}{8} \div \frac{1}{3} =$

   b. $\frac{8}{12} \div \frac{2}{6} =$

   c. $1\frac{2}{3} \div \frac{4}{5} =$

   d. $6\frac{3}{5} \div 2\frac{1}{3} =$

   e. $7\frac{1}{8} \div 3\frac{1}{4} =$

TEST

10. Solve these story problems.

a. Susan found 1 1/2 yards of silk, 2 3/8 yards of wool, and 4 5/8 yards of lining. How many yards of material did she find?

b. If boards are 1 7/8 inches thick, what is the thickness of 15 boards?

c. How many 1/2 foot sandwiches can be cut from a 12 foot sandwich?

d. If three horses ate 1 3/4 bales of hay per day, how many bales will they eat in 7 days?

TEST

e. Mary had 3 5/8 cups of pecans. She used 1 1/4 cups in pecans cookies. How many pecans did she have left?

f. Six dogs ate 55 1/2 pounds of food in seven days. How much did they eat per day?

g. Mary was planning a 140 3/4 mile trip. She had a flat tire when she had driven 86 1/2 miles. How many miles did she have left to travel?

h. Iris bought 3 3/4 pounds of beef, 1 1/3 pounds of Italian sausage, and 5/8 pounds of veal for a special recipe. How much meat did she buy?

FRACTIONS REVIEW
UNIT VIII

ANSWERS TO TEST

1. a. proper
   b. improper
   c. improper
   d. proper
   e. improper

2. a. $\frac{8}{9}$
   b. $\frac{4}{5}$
   c. $\frac{3}{4}$
   d. $\frac{2}{3}$
   e. $\frac{2}{3}$

3. a. $3\frac{1}{5}$
   b. $3\frac{3}{8}$
   c. $1\frac{2}{5}$
   d. $4\frac{1}{2}$
   e. $4\frac{1}{5}$

4. a. $\frac{14}{3}$
   b. $\frac{45}{8}$
   c. $\frac{17}{5}$
   d. $\frac{55}{8}$
   e. $\frac{13}{9}$

5. a. 4
   b. 9
   c. 1
   d. 20
   e. 36

6. a. $\frac{11}{15}$
   b. $1\frac{11}{56}$
   c. $6\frac{4}{21}$
   d. $11\frac{1}{20}$
   e. $16\frac{7}{8}$

7. a. $\frac{11}{21}$
   b. $\frac{1}{2}$
   c. $1\frac{1}{4}$

ANSWERS TO TEST

d. $1\ 4/9$
e. $2\ 5/24$

8. a. $9/10$
   b. $6/35$
   c. $12\ 2/3$
   d. $28\ 11/28$
   e. $14\ 1/6$

9. a. $2\ 5/8$
   b. 2
   c. $2\ 1/12$
   d. $2\ 29/35$
   e. $2\ 5/26$

11. a. $8\ 1/2$ yards
    b. $28\ 1/8$ inches
    c. 24 sandwiches
    d. $12\ 1/4$ bales
    e. $2\ 3/8$ cups
    f. $7\ 13/14$ pounds
    g. $54\ 1/4$ miles
    h. $5\ 17/24$ pounds